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Essays and Cases.

ART. I.—*Observations on Scarlet Fever.* By Dr. SILAS REED. *Read before the Cincinnati Medical Society.*

MR. PRESIDENT:

I do not appear before the Society this evening, in the hope of throwing any new light upon the *nature* and *treatment* of Scarlet Fever. Too many men of talent and experience have already labored to illustrate these points, to afford me an opportunity of advancing any thing original upon them.

I propose, therefore, to confine my remarks principally to the history of the disease, as it appeared in the Western Reserve, Ohio, in the year 1831; and, by describing and enforcing the plan of treatment found most successful in its cure, I hope to contribute something to the support of the principles laid down for its treatment, by Dr. Armstrong, whom I regard as one of the most able medical philosophers of modern times.

EPIDEMIC CONSTITUTION.

Before proceeding to the consideration of the disease, it may be proper to say a few words upon the subject of *Epidemic Constitutions*, or the prevailing diathesis, which, unfortunately, is

too little regarded by many at the present day. I know physicians who cannot believe, that diseases of the same name, may vary, essentially, in their character, in different years, and consequently require very different, and even opposite, modes of treatment.

Were this subject more generally studied, and more frequently permitted to govern our practice, we should be better able to explain *seeming* contradictions in our therapeutic observations.

Without an acquaintance with this important fact, young practitioners, who have never had an opportunity of witnessing epidemics of a lower grade of action, will frequently become exceedingly embarrassed in the treatment of those several conditions of the system, which usually manifest themselves during the prevalence of a highly asthenic diathesis.

During the reign of all epidemics, whether they assume the sthenic or asthenic diathesis, special regard should be paid to the prevailing epidemic constitution, which possesses such a commanding influence over all diseases. Perhaps no physician ever paid more attention to this subject, than the great Sydenham. His observations embraced almost every circumstance of any importance, connected with epidemic diseases; and to him, I believe, we are more indebted for an improved practice in tonic as well as atonic diseases, than to any other man. What constitutes the epidemic constitution, which is capable of producing at one period a tonic, and at another an atonic diathesis of the system, is difficult to say. The peculiarities of the general state of the atmosphere, which contribute to the production of these effects, cannot be satisfactorily explained, from their being altogether uncognizable by our senses, yet we should by no means neglect to watch their effects, especially when *local causes* are present, which always adds complexity and inveteracy to the disease arising from their union. To illustrate this, I would refer to the choleric diathesis, which has been spreading its desolating effects over our country during the nine months past. To any one who has noticed the rise and

progress of the cholera through Canada and the United States, and the epidemic disposition to the disease which prevailed among us during the early part of last summer, it will not be doubtful, I think, that an insensible distemperature of the atmosphere prevailed, which only required some unknown *local cause*, (which seemed to arise more particularly along the larger water courses,) to light up the disease. The disposition to cholera has, in a measure, subsided: but its atonic influence has by no means, passed from among us. Scarlet fever is now prevailing. It will continue to prevail for some time to come—though it will be variable in its progress—at one time almost disappearing, at another breaking forth with renewed violence—until summer shall come upon us, with all its miasmata and other local causes, and perhaps add greatly to its malignity.

This may seem to savour too much of the spirit of prophecy; but when it is considered that Scarlet Fever generally lingers about certain localities for a considerable length of time; that its progress is very slow; and that the summer and autumnal months increase very much its prevalence, and add exceedingly to its violence and complication—I think I shall not be thought to merit such an imputation.

We have the high authority of the learned Noah Webster and several others, in favor of the doctrine of meteorations co-operating with local causes, in the production of various epidemics. That there is an occasional prevalence of a peculiar condition of the insensible properties of the atmosphere, favoring the prevalence of, or giving rise to, particular epidemics, is now, I believe, pretty generally acknowledged.

This change in the insensible properties of the atmosphere, has been termed by Dr. J. M. Smith, "epidemic or insensible meteoration," as distinct from *sensible* meteoration, or changes from heat to cold, dryness to moisture, &c. &c.

There can be no doubt but an epidemic constitution of the atmosphere, whatever it may be, immediately precedes or accompanies all epidemics—producing in the system a certain exaltation or subjugation of the vital powers, which favors, as

they arise, the morbid influence of certain local causes, and a disease of a high or low grade of action, according as the diathesis of the system is either *tonic* or *atonic*, becomes established. The nature of this operating agent in the atmosphere, says Dr. Stephen Brown, forms a subject of curious, interesting, and philosophical investigation to every inquiring mind.

Topography of the Western Reserve.

Before proceeding to remark upon the outbreaking of the disease, I must beg your indulgence a few moments, while I take a cursory glance at the topography of the Western Reserve. To many it has appeared surprising that this salubrious section of country should have been so frequently visited by epidemics. But the artificial production of local causes by what are denominated improvements, may in some measure, account for the fact.

It embraces the northeast section of the great ridge, which divides the waters of Lake Erie from those of the Ohio. The greatest height of this ridge lies 35 miles from the Lake, running parallel with it, and rising upwards of 400 feet above its waters. But the descent, both towards the Lake and River, is so gradual as to give the country the appearance of being almost as level as a plain.

It is, however, nearly destitute of marshes, and to a casual observer, or one little acquainted with the history and topography of this interesting section of our State, the frequency and malignity of its epidemics, could in no way be accounted for. But it must be recollected that the Big-Beaver and Muskingum rivers, take their principal,—and the Cuyahoga and Grand rivers, their entire rise, from the numerous small lakes which are found lying upon the summit of this ridge.

The course of three of these streams being short, and the fall consequently great, affording numerous mill seats, it might be expected that artificial reservoirs, occasioned by milldams, would become very much multiplied. This has been the case; and ever since the close of war, in 1815, when these water powers began to be improved, the epidemics on the Reserve

have increased in frequency, and mortality. About the several heads of the Cuyahoga, where the Scarlatina prevailed when it fell under my observation—the number of natural and artificial reservoirs of water has, for many years, been unusually great—and, until within two or three years, the mill ponds were permitted to be kept up during the summer and autumnal months. It will not appear strange then, that miasmata should be generated liberally, that fevers should prevail every year—and that they should partake much of the congestive character. For many years marsh miasma was so abundant as to give rise to a constant *paludal diathesis* which appeared to act as a continual predisposing cause to various epidemics—and epidemics or insensible meteoration being only required to call them forth.

I am inclined to the belief, that local causes more frequently give the *character* to epidemics—than general causes. But with regard to the local causes which I have mentioned—few *now* exist. The people in the abundance of their sad experience, learned wisdom—and these artificial reservoirs, either from popular inclination or judicial decisions, are now destroyed during the summer months.

During the winter of 1813—14, the pnuemonia typhoides prevailed to an alarming extent on the Western Reserve, as in other parts of the United States. It was a highly congestive and fatal disease—and the first, I believe which denoted a change from the inflammatory to a typhoid diathesis, in that section of country. This diathesis continued to prevail more or less until 1830—but the grade of action frequently varied during this long period.

The great length of time which this diathesis continued, resulted, principally, I am inclined to think, from the universal, and almost constant prevalence of local causes—as marsh miasmata, &c.

The typhoid dysentery of 1824, 26, and 28, which destroyed so many hundred children—and the malignant fevers of 1825, 27, 28, and 30, which were so fatal, and occasioned so much speculation and controversy between the advocates of stimulants in

"*Typhus Syncopalis*," and their opponents—undoubtedly derived their malignity from a sigular co-operation of *general* with *local* causes—occasioning that remarkable prostration of vital action which is observable at the outset of all highly asthenic or congestive diseases.

Who does not recollect the winter and summer of 1828? To the people of the Reserve, it was a year that will long be remembered. The mortality which occurred in Middleburg village—during the months of August and September was truly appalling. It was thought to be typhus syncopalis, and treated accordingly—little regard being paid to the pathological conditions of the several stages and varieties. Its mortality greatly exceeded that of the cholera in this city—being six out of every hundred. I mention these circumstances in order to show the character of the diathesis, which so closely preceded the commencement of scarlet fever, in that locality. The diathesis, however, seems to have become much milder since that year.

Outbreaking of the disease.

It was in December, 1830, that Scarlatina first appeared in Portage county, and the first case which occurred, happened in my own practice—but it was so very mild, as to induce me to think it a common urticaria. The next did not occur in my practice. The patient was a girl of 8 or 10 years of age, and was taken with the usual symptoms of oppression—which continued three or four days—when, by the use of mild purges, and by the natural energy of the system, reaction was induced, and an inflammation of the tonsils came on, together with a faint and partial eruption on the surface. Her physician having never seen the disease, feared to proceed boldly with his treatment lest debility might be induced. The excitement proceeded and inflammation of the brain ensued; when a small bleeding was used—but *too small* to be of the least advantage.

Blisters were then applied, but the inflammation progressed, and the girl died with more strength to the last, than she possessed when taken sick.

Had a more vigorous treatment been employed at the commencement—or had the lancet been used with greater freedom after local inflammation occurred, I am inclined to believe that the patient might have been saved. On the morning after the death of the daughter, her brother, a boy 5 or 6 years of age, was taken with restlessness, nausea, languor, and debility. The father fearing a similar, but more violent attack than occurred in the girl, determined to commence the treatment of the case himself, and thereby nip the disease in the bud. Accordingly, during the forming or highly congestive stage of the disorder, he administered a strong decoction of the *eupatorium perfoliatum*, without premising a foot bath, and warm stimulating drinks. Severe emesis and catharsis ensued, which rapidly exhausted the powers of life,—coma and collapse supervened, and the little patient slept in death within ten hours after the attack. Had the proper means of producing reaction, been used at the commencement, I believe it might have been raised, after which the disease would have run through a course of considerable excitement, and nothing been heard about malignity, debility and typhus.

It is all-important, that we adapt our remedies, to the several stages and varieties. Scarlatina, as it appeared on the Western Reserve, was generally a disease of a highly adynamic character; and in those cases in which reaction was developed, it rarely continued many hours without spreading its violence upon some feeble organ. It was necessary to use stimulation and counteraction one hour—and the next employ depletion.

On the day following the death of the boy, another sister, three years of age, sickened. The parents by this time were panic struck, and began to think their children had taken poison. As the physician called in despaired of her recovery, for no other reason than that the other two had died, several other physicians were summoned, and after using the warm bath, sinapisms, warm drinks, and 20 grains of calomel to evacuate the bowels, the eruption appeared, and in three days she recovered, having had the simple variety, with but little affection of the throat.

I have been thus particular in the mention of the preceding cases, in order to show how the disease commenced—an inflammatory, congestive, and simple variety occurring in the same family.

Most of the cases which occurred during the winter and following spring, assumed the simple form—and were very manageable. Towards summer it increased in violence—but the mortality was slight. As autumn approached, the disease seemed to ingraft itself upon the prevailing remittent diathesis, and the complexity and inveteracy which followed, rendered the treatment exceedingly troublesome, and very much increased its mortality.

Varieties and Stages.

It appears to me that we should adopt Dr. Armstrong's division of the disease into the simple, inflammatory, and congestive varieties, instead of simple, anginose, and malignant. The anginose affection is more or less present in all the varieties; and the malignant form is as frequently the consequence of unsubdued reaction, as of original reduction of vital energy. For practical purposes, it is important that we should attach such *names* to diseases, as are best calculated to convey some idea of their nature—hence the propriety of Armstrong's division. The reaction of the second variety can hardly be said to be *inflammatory*, it is of an adynamic character, and little else than an exalted grade of simple excitement. This reaction exists, however, for so short a time before the development of *local* inflammation, that a better term could not well be substituted. It would be quite unnecessary to describe the symptoms of the several varieties—they answered to the description given by Armstrong. Stiffness of the neck, and swollen and inflamed tonsils, were the first symptoms that indicated the approach of the disease; many, however, had the anginose affection without any attending eruption, and, among adults it was not uncommon to find the eruption without any affection of the throat. The most blooming and general efflorescence occurred in the simple variety—or where local inflammation was not present—

and was always considered a favorable sign. It seldom appeared in the congestive variety, unless the circulation became equalized, and reaction was established; and even then, it frequently assumed a purplish hue, denoting a remarkable atony and relaxation of the capillaries.

A tumefaction of the hands and feet, usually arose with the disease, though dropsical swellings were rarely the consequence. It was not unusual to meet with rheumatic affections, as the result of unsubdued excitement or slight exposure—but they were easily checked by the use of the vol. tinct. Guaiacum. The stage of oppression was short and slight in the simple variety—but long and severe in the congestive.

It happened not unfrequently, that the children of a whole family would be attacked with it, almost simultaneously—while those of another, would sicken at intervals of two or three weeks. A part of the children of some families escaped entirely.

The degree of subsequent reaction could be measured pretty accurately, by the violence and duration of the stage of oppression. The longer and more severe this stage, without inducing congestion, the more violent and malignant would be the following reaction. The stage of oppression tends much to enfeeble the internal organs, and prostrate the vitality; and the diathesis is such, that if reaction supervene, it will most generally eventuate in local inflammation. Hence the great necessity of watching this disposition at the very commencement of reaction, especially during that season of the year when the remittent diathesis prevails, or we shall find it very difficult —many times even impossible, to effect a cure.

The organs most likely to suffer from inflammation and congestion during the course of the disease, are the brain, the liver, and the tonsils.

Excitement, followed by local inflammation, was the most common form of the disease during the summer and autumnal months. I do not recollect meeting with any well marked cases of the true congestive variety, as described by Dr. Armstrong,

except as the result of bad management. A few cases occurred, which wore the aspect of his *irregular* variety, when the stage of oppression was so very severe and protracted, as to be followed only by a slight and feeble excitement. The most strongly marked case of this kind which was recovered from, happened in a boy of nine years of age. The attack was so severe as to induce the parents to think him dying. When I first saw him, he was speechless, stupid, and cold; appearing much like one in a state of syncope—the face was pale, the lips livid, and the pulse almost imperceptible to the touch. He was immediately placed in a warm bath, ammonia, camphor, capsicum, and brandy toddy, were given; mustard plasters and bottles of hot water were afterwards applied, when a slight reaction arose, and continued for several days. Great torpor of the liver and disposition to cerebral congestion were present, but they finally disappeared under a liberal use of calomel and blisters. This boy now resides in Covington, Kentucky. He was taken several weeks after two of his younger brothers, who had the simple variety.

Pathology.

The pathology of this disease is similar to that of all adynamic fevers, which present the several varieties of simple excitement, inflammation, and congestion. These varieties and grades of severity, depend more on the degree of overthrow in the capillary function, than on the presence or absence of venous congestion. Though Armstrong's treatise on this disease is the best I have had an opportunity of reading, yet he appears too much inclined to confine his pathological views to the various derangements of the large vessels. I am disposed to think, that we should view their derangements, whether inflammatory or congestive, as the *effects* of disordered capillary action—rather than the *cause*. Had he taken this view of the pathology, he probably would have been less inclined to bloodletting in the congestive variety and stage of this disease. The various kinds of counter-irritants, seem to be of more service in restoring a healthy condition of the capillaries in congestion, than bloodletting; except the congestion follow a general excitement.

The difference between the inflammatory and congestive forms of disease, seems to me, to depend, not only on a morbid state of the capillaries of a *greater number* of organs in the latter variety, but upon a greater degree of atony induced in these small vessels. When a sufficient tonicity of the capillaries prevails, excitement will be the result; but when they labor under a high degree of atony, congestion of the large vessels, collapse, and death will ensue; unless efficient counteraction, by external and internal stimulation succeed in restoring their tone, and equalizing the circulation.

We are too prone to overlook the nervous and capillary derangement in disease. Their functions are the first to become disordered—and the first which demand restoration.

In the inflammatory variety, there is less waste of the excitability—the small and large vessels possess a tolerable share of tonicity—and excitement is the result. In the congestive form, the sensorial power is deficient, the capillaries appear paralyzed; the action of the heart is enfeebled; the secretions become altered or suppressed; the healthy balance of the circulation is destroyed; and coma and collapse are the consequence.

Treatment.

From the foregoing remarks, it will at once be seen that the remediate management of the disease must be greatly modified, by the different varieties which it is apt to assume. The nature of the cause, the sthenic or asthenic diathesis of the system, and the varieties and stages of the disease, are to be taken into consideration. The complaint generally discloses great want of resistance in the system, yet, if the stage of excitement be not carefully watched, and kept sufficiently subdued, we need place little reliance upon the success of our subsequent treatment.

Before I had an opportunity of seeing the disease, I had made up my mind, from other circumstances than those furnished by reading and analogy, that it was so highly malignant in its nature, as to require an efficient course of stimulation from its commencement to its termination.

While attending lectures here five years ago, one of my room-

mates, Dr. R. G. Huntingdon, wrote his inaugural thesis upon this disease, very strenuously advocating the stimulating plan of treatment; having found it, he said, the most successful mode of cure in the complaint, as it had appeared in the eastern part of the Western Reserve in 1827.

I know, also, that my friend, Dr. Kirtland, of Trumbull Co., treated this disease, and the cynanche maligna, in the same manner;—and it was said, with better success, than those around him who stimulated. And I had not forgotten the fate of a relation, who was bled in this disease, by that Herculian practitioner of Hartford, Connecticut, Dr. Lemuel Hopkins.

By these means I was biased in favor of the stimulating plan of treatment in scarlatina—and it was not until I witnessed its various grades of action, that I became convinced that much of its malignity and mortality, was not inevitable, if *early* and judicious depletion were used. I found that its pathology was very similar to that of the malignant bilious fever of 1828—which was styled 'typhus syncopalis'—and rendered very mortal from being treated with stimulants. I concluded, therefore, to watch closely the several stages, and the progress of the excitement, so as to be prepared to vary the remedies as circumstances might require.

The difference of opinion among the physicians, with regard to the most proper mode of treatment, induced me to look at the result, which soon settled the question; the mortality under the antiphlogistic treatment being only one eighth as great, as that under the expectant or the stimulating treatment. This may appear like a broad assertion, but it can, nevertheless, be proved. As far as I could learn, some physicians did not bleed a single patient during the whole epidemic, except one or two at the very commencement of it.

The simple form of the disease required little treatment, except a cathartic or two, and good nursing. The inflammatory variety was the most frequent form during the summer and antumnal months, and required an efficient, well timed treatment, at the very outset of the excitement. The usual remedies were used for its stage of oppression—and when excite-

ment developed itself, cathartics of calomel, and affusions of cold water, or cold water and vinegar, were applied to the surface.

When these failed to reduce the excitement sufficiently—and there was much tendency to local inflammation—venesection was resorted to. Where the eruption was profuse and general, it rarely became necessary to bleed—as a free eruption and internal inflammation did not seem capable of existing at the same time.

As soon as it becomes necessary to take notice of the affection of the throat—it is all-important that we apply externally some irritant of sufficient power to arrest the inflammation at once. A blister, mustard plaster, or spts. of ammonia, may be used, according to the severity of the local affection. It is very important that we attend to the affection of the tonsils early,—as it will then be an easy matter to subdue the affection—and prevent many dreadful consequences. I should mention, however, that an emetic of ipecacuanha, given early in the disease, when too much oppression is not present, will greatly relieve the inflammation of the throat—as well as most of the general symptoms—and it sometimes becomes necessary during the progress of the disease.

The best cathartic in this malady, especially during the summer and autumnal months, is calomel—and it should be used freely. At these times of the year the hepatic secretion is always found more or less disordered, and the bowels are generally torpid, and coated with a tenacious slime—so that the free use of calomel cannot well be dispensed with. It should be given in doses of from 8 to 20 grains—and permitted to remain in the system for several hours before any thing more is given to work it off. A few portions given in this manner, will evacuate the bowels, and reinstate the secretions, without effecting the mouth. The stools should always be inspected—and the calomel continued until the secretion of bile is found to be restored.

When the excitement is considerable, and the eruption free and general—cold effusions must not be neglected. Their effect is very beneficial, and they produce the most agreeable

sensations to the patient. But when there is chilliness or local inflammation present, they must be withheld.

If the excitement run so high as to endanger the vitality of any important organ, from the supervention of inflammation or congestion, the lancet must be brought into requisition immediately—and it must not be laid aside, until the outward symptoms are entirely reduced—if we regard the subsequent well-being of our patient. We should bear in mind, at the same time, the diathesis of the system, and not unnecessarily waste the strength of the patient, as fatal determinations and prostration may occur at a moment when we little expect them.

It appears that the older authors advocated depletion in this disease, even in the most malignant forms,—and I can hardly account for the fact, that most of the faculty, or at least most of the later writers, advocate a contrary treatment.

We should not depend upon one or two favorite means. It is from the combined influence of several remedies, with the antiphlogistic regimen—that we are to expect the best success when we wish to diminish the general and local excesses of the arterial system, and ward off inflammation and subsequent debility.

It is one of the nicest points in the practice of physic, not to be too profuse or too sparing in our applications; but to make their united force exactly equivalent to the reduction of the prominent symptoms.

It was not unusual to find our patients, at the first visit, inclining to stupor, or in a state of delirium. I recollect being called to one, who had been laboring under delirium for fourteen hours. A slight and partial eruption was present, the surface was hot and dry, pulse quick, tense, and small—and a disposition to stupor prevailed. I did not think the boy would live, and requested that some other physician should be called in to my aid, but the parents being unwilling to do so, I concluded, after stating my doubts, and the course I should pursue, to commence the treatment of the case. This case occurred in the month of September, near the commencement of the severest part of the epidemic, and as there was so much difference of

opinion with regard to the proper treatment, I feared, if I should not succeed, that an injury to myself and to the depleting plan of treatment would be the consequence. I commenced, however, with the belief, that no man should practice physic, who is not at all times fully prepared to risk his professional reputation, on the chance of saving his patient's life. I was under the necessity of bleeding him three times, and took 40 ounces, in all. This with the use of calomel purges, restored him in a very short time.

The treatment in the congestive variety was the same as directed for the congestive forms of other diseases—except bloodletting. I am inclined to think Dr. Armstrong too partial to this remedy, in congestive diseases.

In the malignant form, when depletion cannot be carried any further, the use of capsicum should be the more relied upon, than any other one remedy. In this disease, its virtues are too little appreciated. It should be given in the manner directed by Dr. Eberle in his Practice of Physic. When there is a tendency in the tonsils to gangrene, I have always found it of inestimable value.

In making the foregoing, very imperfect observations—my whole object has been to direct the attention of the faculty to the diathesis in this disease—its several grades of action—the necessity of closely observing its progress—and the great importance of early, efficient, and well-timed depletion in the inflammatory—and of counteraction and stimulation in the congestive variety.

Cincinnati, March, 1833.

ART. II.—*Remarks on Scarlet Fever, in the Northeast part of Ohio.*

WINDHAM, *Portage County, Ohio, March 20th*, 1833.

To the Editor of the Western Journal.

SIR: Having seen some notices of the Scarlet Fever, in your

valuable periodical, and the views there contained, with regard to the treatment, not agreeing with my practice and experience, I have been induced to submit to your consideration, the outlines of my management, with a few observations, which you are at liberty to lay before your readers; and if any thing shall be offered that may lead to a more successful treatment of the disease, I shall have the pleasure of having subserved the interests of community.

About a year ago, the scarlet fever, for the first time, made its appearance in this place and vicinity. Of its ætiology, I can say little. From its appearance and progress, I am decidedly of the opinion that it is not contagious, but epidemic. It prevailed generally in fair weather, immediately succeeding rains, particularly if it cleared off warm and dry. After the equinoctial storm in September, it appeared within three hours of the same time, at five or six different places, in the circuit of fifteen miles.

Those cases which came under my practice, were generally of the anginose kind, though some were of a mild, and some of a more malignant character. It prevailed mostly among children, though there were a few cases among adults. The fever was generally ushered in with cold chills, high arterial action and excessive heat of the surface, in which cases, the rash made its appearance, sometimes in three or four hours, while in others it delayed as many days. There was swelling of the tonsils, uvula, and parotid glands, but no sloughing. In a short time, the tongue became glossy, and of a deep red color, also the fauces and throat put on a similar appearance. In others, the mouth was filled with canker. In summer and fore part of fall, most of the cases were taken between midnight, and six o'clock in the morning, with violent vomiting and purging.

The fever generally commenced with high excitement, but if care was not taken it soon ran into a typhus form; while a few cases put on this appearance from the beginning. In one, particularly, which succeeded immediately after the measles, the patient sunk into a low typhoid state, with cold clammy sweat. In this instance, and one other in the same family, but fever of

a different grade, there was a complete cessation of voice for seven days. Generally in the commencement, the throat was sore, and deglutition difficult. This symptom lasted only about forty-eight hours. After about the third or fourth day, there was considerable pain and swelling of the wrist and ankle joints, which continued through the remainder of the disease. In some, this affection was quite tedious, and it was present in almost every case; a fact I do not recollect to have seen noticed by any author in treating of this fever. It was mitigated by the application of poultices of wheat bran and vinegar. The fever continued from three to five days; generally beginning to subside on the fourth, but never increasing longer than till the fifth day. At this stage of the disease, the desquamation of the cuticle commenced. On the fourth day the rash commonly rose up in small watery vesicles with the apex whitish; the surface having the feel of a grater; in a short time after this symptom made its appearance, the firey redness of the surface was changed to a chocolate color, and then all the unpleasant symptoms rapidly subsided.

Treatment.

In the commencement, I prescribed a cathartic of equal parts by measure of jalap, sulphur, and cream. tartar. If the arterial action was high and the skin hot, I made use of tepid affusions to the body and extremeties, with cold water and vinegar to the head. The external application to the throat, was flannel cloths wet in a strong decoction of red pepper and vinegar. To those of the greatest severity, I made use of mustard poultices, and emplast. canthar. with benefit. Internally, the mouth and fauces were gargled frequently with a decoction of blackberry briar root, to which borax was added, and made sweet with honey. In the most severe cases, myrrh, cyenne pepper, and brandy, were made use of with the happiest effects. As expectorants, antimonial wine and vinegar of quills, were found to be of great service. But the remedy on which I placed the greatest reliance, was a powder, composed of the carb. ammonia and nitre. When the fever was the highest, and in the first stage of the disease, I gave a greater proportion of nitre, with

the addition of a little ipicac.; but as the fever began to subside, the ipicac. was entirely, and the nitre gradually withdrawn; while the ammonia was increased, and camphor added, which were given freely during the remainder of the illness. Some mild aperient, such as magnesia and rhubarb or castor oil, was administered daily, if necessary, in order to keep the bowels loose and open. When the fever began to abate, I found superior advantage from the application of bass-wood leaves wilted in warm water, to the surface generally. They produced a gentle perspiration, and broke up the fever at once. As soon as the febrile action was gone, a decoction of cinchona, orange peel, and chammomile flowers, was given with advantage. For drinks, I made use of milk and water, toast and water, apple water and herb tea, as best suited the patient. Rubefacients were applied to the feet throughout the disease.

The above is a general summary of my treatment. The effects resulting from the administration of ammonia were the most salutary. It produced no unpleasant results in any case, whether given in the high excitement or collapse; and I can recommend its use to the profession with confidence, in any stage of the disease. Opium was found to be an unsafe remedy, producing determination to the brain, and stupor. From witnessing its effects in two or three instances, I found that calomel increased the soreness of the mouth and fauces, and was detrimental, unless given in the last stages of the disease, to correct a morbid sensibility of the stomach and bowels.

The sequelæ spoken of as incident to this disease, such as dropsy, suppuration of the parotid and sub maxillary glands, slight fevers, night sweats, &c. &c. I was not much troubled with. In upwards of seventy cases, but one was followed with anasarca, and that was mild. Another patient who had been subject to scrofula, was troubled with a swelling, and ulceration of the parotid glands, which was soon corrected by the use of iodine. In a few cases, there was a disagreeable discharge from the ears. This was soon relieved by injecting into them a solution of the oxy-muriate of mercury.

The above detail, is a simple narrative of facts as they oc-

curred, coppied principally from notes taken during the progress of the disease. There were no unpleasant symptoms that did not generally yield, immediately to this treatment; and but one that proved fatal.

Yours with respect.

GEORGE E. CONANT.

DR. DRAKE.

ART. III.—*Notes of a case in which Hydrophobia was prevented.* By LANDON C. RIVES, M. D., of Cincinnati.

Hydrophobia, one of the most ancient diseases of which we have any authentic record, remains to the present time one of the most incurable. Invited to the task by the terrific agonies of the sufferer, not less than by the fatal character of the malady, physicians have applied themselves diligently to the discovery of some method of cure; and *for this purpose*, they have employed at different periods, almost every therapeutic agent known to the profession. Nauseants long continued, mercurials freely and copiously administered, arsenic, bleeding ad deliquium animi, the cold bath, submersion almost to drowning, belladonna, nux vomica and the whole tribe of narcotics and antispasmodics, cantharides internally and externally, with many other of the most active medicines, have been successively used and lauded; and as if to furnish further demonstration of the fallacy of medical observation, the most extravagant eulogies have been pronounced upon the mildest, and most inert articles, as olive oil and the water plantain. Not only has the regular pharmacopaia been exhausted in the search after nostrums for this malady, but a tentative and empirical practice, (far beyond what has prevailed in any other disease,) has added a long catalogue of *specific* remedies, all of which, after an ephemeral existence of

a few days or months, have been consigned, by the unerring judgement of experience, to merited neglect, if not to oblivion. It may still, therefore, be assumed as an indisputable fact, that hitherto science and empiricism have *equally* failed to elicit any successful method of treatment, and that hydrophobia, in spite of all attempts to bring it under subjection to medicine, maintains with resistless power, its empire over the lives of its unhappy victims. But fortunately for the cause of humanity, the prophylaxis of rabies is far more certain than its therapia. Sugery has brought its resources to the aid of medicine, and by their combined action, the disease, if promptly attended to, may be prevented with tolerable certainty. As an illustration of this proposition, I submit the following case to the profession. It has no novelty I am aware, and if it have any interest, it derives it *solely* from furnishing a confirmation of the success of a prophylactic treatment, which is already received as the most probable method of averting a malady, which when established, bids defiance to every remedy, and bring upon the unhappy patient unmitigated suffering, and ultimately death, with scarcely an exception.

Case.—I was called on Friday the 16th of November last, to visit Mrs. S——th, who was bitten on that day by a dog said to be mad. Upon my arrival, nearly two hours after the occurrence, I found her surrounded by her neighbors and considerably agitated. I was not able to procure any history of the dog. The only facts which I could collect were, that a strange dog had entered the kitchen where Mrs. S——th was employed; that upon being ordered out, he made his way into an adjoining room, when being pursued by Mrs. S——th, (who was prompted by maternal apprehensions for the safety of her children, supposed to be in the room,) he turned upon her and made a furious assault, in which he inflicted a severe wound upon her left shoulder, and another of less magnitude on the left temple, about an inch or an inch and a half from the external canthus of the eye, and nearly in a horizontal line with it. Besides these wounds, shewing *evidently* the marks of the teeth, the cuticle

near the left elbow was abraded for the space of a square inch, supposed by Mrs. S——th to have been done by the dogs feet.

Uncertain as I was from this account, of the condition of the dog, I *yet* did not hesitate to recommend a decisive treatment. Nothing less than excision and cauterization could satisfy my notions of professional fidelity and responsibility, in the case of bite by a dog indisputably rabid; and no computation of chances which I was enabled to make, founded upon the presumption that the dog was not in that state, seemed to relieve me from the obligation of proceeding as though the madness were ascertained. I accordingly recommended excision of the bitten part on the shoulder, a longitudinal and transverse incision down to the bone, through the wound in the temple, and cauterization with nitrate of silver. The proposition was received with horror by many of the *good* neighbors, who were present, and one or two of them, even ventured to remonstrate against a cruelty so wanton and unneccssary. Nevertheless the good sense of my patient triumphed over feminine timidity, and the suggestions of false tenderness; and, refusing to hazard her life upon the chance of the dogs not being mad, she submitted to the operation already indicated, and which need not be more particularly described. The slight wound near the elbow was treated by the application of lunar caustic alone. The eschars began to separate in a few days, a process which was accelerated by soft emollient poultices. The ulcers thus established, suppurated kindly, and were kept in a state of maturation for several weeks by digestive ointments. No internal medicines were administered, except such as seemed to be indicated by the condition of the sores; and apart from the treatment already recited, no other prophylactic, except a careful attention to sustain a cheerful disposition, by inspiring confidence and hope.

My patient remains well, never having suffered any anomalous or unpleasant symptoms whatever.

The suspicions of hydrophobia, which attached to the dog acquired additional strength, as the circumstances connected

with his history were progressively developed, until they were finally confirmed by the occurrence of indisputable rabies in many animals bitten by him. It appears that the dog had been turned loose on the morning of the accident, by the Rev. Mr. Kemper, who resides on the Walnut Hills, a short distance from this city. He had purchased him a few weeks previously from a butcher, and for the purpose of keeping him until he became accustomed to his new home, he was secured with a chain. I am informed by Mr. K. that he observed nothing peculiar about the dog while in his possession, except that he was uncommonly *noisy and restless*, which was attributed by Mr. K. to impatience of confinement. *No suspicions of hydrophobia entered the mind of Mr. K., for he tells me that the dog both eat and *drank* as usual, was tractable and docile, and even on the morning of his liberation *lapped water*, and manifested his obedience by returning to his kennel when ordered. As soon as he was unchained, he took his course in the direction of his late home, but in passing through the farm, bit two hogs, the property of Mr. K. which died hydrophobous, in less than a month.

The dog was next seen in the market on Fifth street, in this city, where he bit a horse of Mr. Getts, a farmer, living three miles in the country. This horse also became hydrophobous and was shot by his owner. The next account of the dog, places him at Mr. Mannery's on the western side of Mill Creek. Here he entered the house abruptly, but committed no outrage. His conduct, however, exhibited a strange compound of irritability and of gentleness; laying his head on the lap of Mrs. F. an old lady of the family, he seemed to invite as well as to be pleased with attention, but immediately afterwards, taking his station under a bed in the room, his temper appeared to be suddenly revolutionized, and he manifested a disposition to bite all who approached him, particularly the children; whereupon Mr. M. taking him by the chain (which had been left suspended to his

* "Dubancix has seen mad dogs drink without difficulty, and plentifully." And "Dr. Gilman speaks of a dog which was not deemed rabid, *because it eat and drank well;* but as it seemed indisposed, it was killed, though not before it had bitten a man, who fell a victim to hydrophobia.

neck by Mr. Kemper) led him out and secured him to a stake in the yard. But he annoyed the family so much by howling, that Mr. M. very soon determined to dismiss him, and after taking the collar from his neck, with a view of hastening his departure, he set two dogs upon him. These were bitten by him, and killed the next day by Mr. M. whose apprehensions had been awakened by hearing of the treatment to which Mrs. S——th had been subjected. In pursuing his way down Mill Creek, the dog next bit another, belonging to Isaac Mills, and two cows of Mr. Stabler. Mills' dog died hydrophobous on Monday 26th, ten days after the reception of the wound. Stabler's cows died rabid also; one in three weeks, and the other in six, notwithstanding the *unfailing* skill of a German charletan, who very kindly insisted upon taking charge of *my* patient, had been exerted to preserve them. The only other animal that was bitten, as far as my information extends, was a horse belonging to a Mr. Stricker; and it is remarkable, that with the exception of my patient, it is the only instance in which hydrophobia has not occurred, among all the animals that were bitten, and whose lives were spared long enough for the developement of the malady. The wound, which was inflicted on the lip, was well washed and cleansed, and covered with a stimulant dressing.

In reviewing the preceeding case, several reflections suggest themselves; and first in regard to the dog, it would appear if the circumstances related may be relied upon, (and I believe they may,) that an aversion to water, does not constitute a uniform symptom of rabies in the canine species, however invariably it may accompany the malady in the human subject; nor is *furious madness*, as is ordinarily believed, always a concomitant of the disease in the dog, more than in man.

In regard to the patient whose case has been related, the most interesting and prominent reflection connects itself with her safety. But it may be asked, is she even now secure after the lapse of six months? I answer, *unhesitatingly*, that I believe she is. I am not ignorant that cases have been reported, in which it is said that the disease has occurred after the lapse

of a much longer time, but in the falibility of medical opinion and the close resemblance of *symptomatic* rabies, to which the bitten are equally liable with other persons, I find ample reasons for distrusting extravagant statements of this sort. And moreover in the present case, I can perceive no reason, why a poison so concocted, as to produce its effects in every other instance, in a period varying from ten days to six weeks, should lay dormant in this for more than six months. As in other cases of inoculated diseases, the constitution of my patient may have been insusceptible to the action of this morbid poison. But this is a source of fallacy, which must in the very nature of things attach to every case of prophylactic treatment on record; and can in no way invalidate the present, which must be regarded as an example among many others of the success of preventive measures, unless it should be divested of that character, by the occurrence, hereafter, of hydrophobia in my patient, an event, which should it unhappily take place, shall be promptly announced to the readers of the Journal.

Cincinnati, June, 1833.

ART. IV.—*Observations on some of the uses and abuses of Purgatives.* By DANIEL DRAKE, M. D.

It has long been a sort of adage, that men's opinions pass from one extreme to another—the opposite. Such librations depend on a variety of causes, among which I may name, fashion, want of investigation, and excessive deference to authority. Every speculative science abounds with evidence in support of these assertions, but none perhaps afford so many striking and melancholy examples as medicine.

In all ages, the majority of its practitioners have not given themselves the trouble of observing and thinking, but eschewing the investigation of principles, have been contented with

adopting the conclusions of those whom they regard as eminent. This doubtless will be the case, as it is easier to walk in the footsteps of a guide than to strike out a new path or even to correct his aberrations. Every distinguished man has his adherents, and when they have once assumed that character they seldom desert either him or his principles. Their successors of the next generation, may worship at some other shrine,—a new star ascendant may blaze the zenith—but the old idolaters will in general prefer to keep their gaze upon that which dazzled them in youth. Thus, it is the multitude—the great commonalty—who spread and perpetuate the errors of genius. Their blind devotion, is at variance with the spirit of improvement and reform. They are more obedient to the authority of names long venerated, than to facts, They are personal partisans, jealous of the fame of their *Palinurus*, and proud of their fealty, and fetters. Such being the undeniable reality, it is important to scrutinize the opinions and *dicta*, of those who are rising into distinction, or whose fame is gradually spreading over the world; that the errors mixed up with the truths they develope may not be implicitly adopted.

Among the physicians of the present age, who have attracted the attention of the medical public of both hemispheres, none is so conspicious as Broussais. The captivating simplicity of his pathological and therapeutic views, is a great *prima facie* recommendation to most of the profession; and it is undeniable, that these views are becoming generally known, if not generally adopted in the United States. They present much, that I believe will stand the test of "human scrutiny, talents and time," but not a little at variance with that experience, which must ultimately decide every thing in practical medicine. Among the errors of this truly ingenious man, I would enumerate his proscription of cathartic medicines. In this opinion I may be wrong; but it can do no harm, to institute a brief but comprehensive inquiry into the *modus operandi* and effects of purgation; in doing which, I hope to be guided by those lights of physiology, by which he and his disciples profess to be directed.

Purging is the increase of a natural function. It always

implies an excited state of the muscular tunic of the bowels. In ordinary, the action of this tunic is maintained by the stimulus of the bile and fæces. Acting on the mucous membrane, like the blood, on the lining membrane of the heart, they produce a peculiar excitement, which is determined upon the associated muscular tissue, and originates its peristaltic contractions. These contractions may be rendered more frequent and forcible by a great variety of agents physical and moral, noxious and therapeutic. Most of them operate by being applied to the mucous membrane; but some produce their effects when directed upon other and distant parts, and present to the mind this question--are they operative on the muscular tunic from its association or sympathy with the parts to which they are applied? or do they first raise in the mucous membrane an excitement, which, as in ordinary evacuation, augments the activity of the muscular coat? Thus, does fear or a tobacco poultice to the abdomen, or castor oil injected into the veins, produce an effect on the mucous membrane, and through it on the muscular? or does it exert its influence on the latter, without the intervention of the former? As no practical benefit would, perhaps, flow from the solution of this question, I shall leave it, and proceed to inquire into the condition of the mucous membrane in those varieties of purgation, in which that surface is manifestly involved.

It appears to be a favorite idea with the members of the school of Broussais, that every excitation of this surface, which produces purging, is a state of disease. But whence the necessity of this conclusion? Do we not perfectly excite the skin, by internal and external means, into increased secretion of caloric and of perspiration, without calling it disease? Do we not augment the action of the muscles of animal life and accelerate the movements of the heart, in many cases to a great extent, without regarding either of them as disease? It is said, however, that the mucous membrane of the alimentary canal is tender and susceptible; but he who "tempers the wind to the shorn lamb," has, within certain limits, and those not very narrow, endowed every part of the living body, with an ability to bear the

impress of the agents which in the common course of nature, are to act upon it; and has, also, given to each organ no inconsiderable capacity for extended and diminished function. Whilst, I would admit, then that it is possible, by the untimely, the long continued, or the excessive use of catharic medicines, to excite real disease in the mucous membrane, I am by no means prepared to grant, that purging is *necessarily* attended with disease in that surface. Moreover, much of the irritation which purgatives, at any time may raise in that part, is speedily allayed by the increased secretion which they create; as a flow of tears appeases the irritation of the eye, when injured by dust or a stimulating collyrium.

The increased persitaltic motion and augmented secretion, which follow the administration of purgatives, are, in fact, fine examples of the *vis conservatrix naturæ*, at once eliminating the irritating material, defending the surface from its rude contact, and carrying off the superabundant fluids attracted to the part. Thus we find, that when purgative medicines operate freely, the individual is merely weakened, and, in a few hours afterwards, if not ill from previous disease, feels uncommonly well and cheerful; but if the irritation which they excite, is not a *cathartic* irritation, the consequences are bad. It is, then, as if non-purgative irritants were administered, in such quantities as to excite inflammation in the membrane.

It is undeniable, however, that cathartics may be given in such great doses, composed of such acrid materials, or so frequently repeated, as to excite inflammation even when they operate freely and produce copious secretion; but this is the abuse, not the judicious use of these medicines. It is quite possible, moreover, for the condition of the patient to favor their bad, instead of their good effects. Thus, if the lower bowels be loaded, impacted and dry, it is difficult to reach them with cathartics, and these medicines, if drastic and given in large and repeated doses, may raise in the stomach and upper bowels, an inflammatory action, attended with vomiting and an increase of constipation. In all such cases, mild hydrogogue purgatives should be preferred, diluted drinks should be liberally administered, and large emollient injections thrown into the colon.

Again. Purgatives—under other circumstances entirely harmless—if given when the powers of the heart are great, and the system of the patient is highly phlogistic, instead of producing increased secretion and accelerated peristaltic action, are apt to generate a certain degree of enteritis, and increase both the costiveness and the phlogistic diathesis of the patient. And this I am convinced is the greatest abuse of purgatives which exists in practice. There is, perhaps, no physician who has not, unconsciously, committed it; but some are more prone to error in this respect than others. All who are timid in the use of the lancet, run into this error. Concluding, *apriori*, that they can subdue fevers, by purgatives, without previous blood-letting, they act accordingly. The dose operates imperfectly or not at all, and in a few hours another is given. To this a third succeeds, under still more unfavorable circumstances, for the former have, perhaps, increased the inflammatory orgasm, and although considerable purgation, may finally, take place, it by no means follows that the patient is relieved. On the contrary, it often happens, that his situation is more unprosperous than before the first exhibition; but the physician not suspecting the cause of failure; but, concluding that his measures have not been sufficiently vigorous, resumes them with renewed ardor, and when his patient dies, reflects upon himself for not having purged him more effectually! It would be difficult to say too much against an abuse of purgatives, which contributes so greatly to their discredit, and converts so many cases of curable into incurable disease. Blood-letting and purging are natural associates, but they should not go hand in hand, much less should evacuation from the bowels precede that from the blood-vessels. Purging never *prepares* the system of the patient for venesection; but in every case of phlogistic action, the latter gives efficacy to the former.

Farther. Many physicians are not aware of the importance of attending to the state of the skin, when they administer purgatives; and by allowing their patients, when not very ill, to remain in cold or damp situations, produce a state of their abdominal viscera, by no means favorable to the safe or successful operation of purgatives.

Finally, when cathartic medicines do not excite inflammation, they sometimes produce a nervous irritation with pain and spasms. When this state of the bowels exists, new administrations are not merely useless but actually injurious. It is most apt to occur in feeble constitutions with a predominant nervous temperament. Something of this kind ordinarily follows the operation of active cathartics, but generally subsides in a few hours, under the influence of rest, external warmth and the use of demulcent drinks. To prevent this bad effect from the repeated administration of purgatives, nothing is so beneficial as narcotics conjoined with sudorifics. They subdue the morbid irritability of the mucous and muscular tunics, give a centrifugal direction to the fluids, and by keeping the abdominal viscera in a state of comparative quiet for the night, prepare the patient for new operations on the succeeding day. By neglecting this composing course, much harm is often done by purgatives.

Administered under these restrictions, cathartic medicines seldom or never, in my opinion, excite disease in the mucous membrane, and may be rendered highly efficacious in a variety of diseases. Let us review some of their therapeutic effects.

1. They remove feculent matters, the retention and accumulation of which, it appears to me, cannot be permitted with impunity in any form of disease. The law of the animal economy is, that they should be evacuated within a given time. If retained beyond it, they undoubtedly suffer changes of composition which render them irritating to the mucous membrane of the bowels, and through it to the whole system. Who has not felt the unpleasant effects of this retention, even when it arose from mere neglect, or the influence of some passion which produced no other morbid effect, than an impeded peristaltic function; and who has not felt himself a "new man," both physical and moral, from the mere removal of this cause of irritation. But if such retention is sufficient to impair the health of one previously sound, how can it fail to aggravate the sufferings and augment the danger, of one already ill from other causes.

I am aware, that it is held by the opponents of purging, that if there be *any*, even the least, inflammatory action of the mucous membrane, purgatives on that account are contraindicated, and will of necessity do more harm than good. But will not the retained fæces, lodged on an inflamed surface aggravate the disease? And where is the evidence, that calomel, castor oil, Epsom salt, or magnesia followed by lemonade, can augment the inflammation of the part, to which they are applied? The same substances placed on the skin, in a state of inflammation, would be soothing, and I can perceive no reason why they should be irritating when directed upon the mucous membrane of the bowels. It is said, however, that the increased peristaltic action necessarily augments the inflammation. This I think may well be questioned. It has certainly not been proved, and several facts would seem to contradict it. For instance, we see violent colics, which left to themselves, destroy life by the ultimate intensity of the inflammation, speedily cured by simple purging; dysentery, or inflammation of the colon and rectum, is more successfully treated by mild but effoctual purgatives, than in any other way; and chronic rheumatism, an affection of the muscular system, is often cured or much mitigated by exercise. But, even admitting that the peristaltic contractions quickened by cathartics, exert an aggravating influence on the mucous membrane, still their effect in expelling the accumulated fæces may more than counterbalance it.

2. But the beneficial effects of purgatives are not limited to the expulsion of the fæcal contents of the bowels. They carry off the morbid secretions of the mucous membrane and liver. I am not ignorant that many physicians believe these secretions to be, as they express it, in such relation with the mucous membrane, as not to irritate it. But I can by no means subscribe to this doctrine. When the sanious fluid of certain ulcers is retained upon the surface, the patient is thereby rendered more uncomfortable; the great and instantaneous relief which follows the opening of abscesses, cannot, I think, be wholly accounted for, from the removal of a distending cause; the opening of the eye lids, whereby the secreted fluids escape, in cases

of conjunctival inflamation, is most grateful to the patient; finally, nothing is more common, than to find the sphincter ani excoriated by discharges from the bowels in febrile affection, though that part bears a relation to the contents of the canal in the morbid state of its secretions, precisely the same with the mucous membrane above. But without insisting on the irritating quality of the secretions of the mucous membrane, in its diseased states, it must be admitted, I think, by all, that if the food which is or has been taken, be not promptly and properly digested, it runs into fermentation, and gives birth to fluids and gases, which not being the direct product of morbid action in mucous membrane, cannot fail to act on it as irritants; and require, therefore, to be hurried out of the system. Every dyspeptic is aware of this fact from personal experience. Lastly, when the liver is diseased, and pours its morbid secretion into the bowels, we know, from multiplied observations, that vomiting or diarrhea, or both, are a common consequence, evincing, conclusively, that they are capable of raising an irritation in the mucous membrane;—a disturbance which can only be allayed, by promoting their egress from the offended bowels, by purging.

3. In the third place, a great variety of diseases, particularly fevers, are attended with a plethoric or engorged state of the portal circle, attended with sense of oppression, and giving rise to inflammations, sometimes seated in the alimentary canal, at other times in the spleen, and very often in the liver. Increased secretion is the natural remedy, for these, as for all other sanguineous congestions; and to this end purgatives may be administered with an advantage not to be derived from any other method. To cases of this kind, calomel or the blue pill, as a chologogue and the saline cathartics, and compound powder of jalap as hydrogogues, or promoters of the sero-mucous secretion of the bowels, are admirably adapted, and often followed by decided relief to the patient. The amount of depletion from the portal viscera, which may be effected in a few hours, in this way, is greater than could be brought about by any

other method—not even excepting venesection—and why should we not avail ourselves of it?

4. Fourthly, the bile is an excretion of the blood, which, as a secreted fluid, it performs an important function in the bowels. When its elements are retained and circulate throughout the system, they act as a poison. In fevers they augment the danger, and in chronic affections unattended with fever, or acute inflammation, they never fail to generate, or, at least, aggravate constitutional irritation. Hence it is of great importance, in all diseases, to maintain the action of the liver; with chologogue cathartics; by means of which, with little else, a great many cases of autumnal fever and chronic nervous affections are successfully treated. Too exclusive a reliance is, however, sometimes placed on this class of medicines, or they are not preceded by the blood-letting, or followed by the anodynes which are necessary to their beneficial effect.

5. Fifthly the excitement in, and fluxion to, the gastro-enteric mucous membrane, which we effect by purgatives, is a valuable means of revulsion, especially in diseases of the brain and spinal cord, of the eyes, the skin, the muscles and the joints. This mode of counter-irritation is the more beneficial, from its consisting in the excitation of a natural function, and, therefore, very unlike sinapisms, blisters, and other rubifacients. It is curing a disease, not by inciting another, but by concentrating and expending the nervous energy and blood, in the performance of a function of health; which is always preferable to appropriating them to the support of a morbid counter-irritation, and often easier to be brought about.

6. In the sixth place purging is important as a means of general depletion—for counteracting a phlogistic diathesis. Although blood-letting is undoubtedly the chief agent for this purpose, it should not be regarded as, of itself, sufficient. The excessive constitutional irritation, which, in many cases follows copious and repeated bleedings, before the local inflammation is entirely subdued, is well known to the profession. When purgatives are omitted, it is more likely to occur, than when they are made a part of the system of depletion; and those

physicians who neglect to avail themselves of this class of depleting agents, can never, I think, be so successful as those who employ them.

7. Seventhly, experience proves, that we may often purge our patients when we cannot safely bleed. This especially is true, in what are called nervous diseases; which are often attended with engorgement of the brain or spinal cord, without an inflammatory diathesis. In these cases, the derivation from the parts affected, is attended with increased strength, the restoration of a sanguineous equilibrium, and general tranquillity to the feelings of the patient.

If there be any reality in the majority of these views (not suggested as original, but embodied as true) it follows, that purging is a safe and powerful therapeutic agent, in a great variety of morbid states. Some of these I propose to make the subject of a future paper, and shall conclude the present, with a few remarks on the selection of cathartics, and their union and alternation with other curative means.

1. I have already said, that when the phlogistic diathesis of the patient runs high, blood-letting must precede purging. I recur to the subject here, for the purpose of adding, that in numerous cases, apparently unattended with much inflammatory orgam, and in which it seems admissible to proceed at once to the administration of purgatives, we are disappointed in their operation. To promote this I know of nothing so powerful as blood-letting, carried to incipient syncope.

2. In a great variety of cases, opium is a valuable adjuvant to cathartic medicines. When they are given immediately after the operation of an emetic, or a copious bleeding, or when the patient is in great pain, or is cold, or affected with spasms, or labours under diarrhœa, their effects are generally rendered much more beneficial, by the addition of opium. The operation from this union is somewhat retarded, but ultimately takes place in the kindest manner, especially, if the dose be a little larger than usual.

3. When the inflammatory diathesis is intense, mercurial, oleaginous, and saline cathartics, should be used; and rhubarb,

aloes, scammony, senna, croton oil and the astringent or irritating purgatives, omitted. By the neglect of this rule, purging often fails to do good, or even proves injurious.

4. On the other hand in diseases not inflammatory, and even in the milder inflammatory affections of phlegmatic persons, the cold and saline cathartics are often inoperative, while the warm and stimulating produce an early and beneficial effect.

5. When that form of nervous irritation which may be called hysterical, is present, we may with great advantage add assafœtida, oil of amber and other antispasmodics to the warm and active cathartics just named.

6. When the patient is in a state of debility with exhaustion, the cathartics which we select should not only be of the stimulating kind, but united or alternated, with the bark or some common vegetable bitter.

7. In conclusion, to present the principles of which these rules are predicated, I may say that if there be vascular or intense inflammatory action, if the powers of the patient be exhausted, or his nervous system of organic life be sluggish, his sensibilities be morbidly acute, or his liver torpid, purgatives will not operate efficiently, unless the means of correcting to a certain extent, these disordered conditions be simultaneously employed; the reason of which is, that purging is a natural function and cannot be excited in a favorable way unless aided by other means adapted to the morbid diathesis of the system.

Should these cursory observations have the effect of bringing to the pause which favors deep reflection; the younger members of the profession who are about to form hasty conclusions on this important subject, the end for which they have been hastily thrown together will be answered.

June, 1833.

Reviews and Bibliographical Notices.

ART. V.—*Epidemic Cholera: An Eclectic, Miscellaneous and Clinical Review.*

Having given up a liberal portion of our last volume to the history and treatment of Malignant Cholera, we felt disposed to let the subject rest for the present, but unhappily the state of the public health commands us to resume it. The great invader seems to have slumbered through the winter, but to acquire fresh power of desolation. On the opening of spring he took the field with renovated activity; and has already made himself felt from the sunny sugar lands of the Delta of the Mississippi, over the dry and calcarious ridges of Kentucky, to the ravines and sand stone hills of western Virginia and Pennsylvania. Thus, from the sea to the mountains, through ten degrees of latitude, and a thousand feet of elevation, over a great variety of soils, and among the people of ten different states, we see the destroyer a second time put forth his strength and select his victims!

We shall not presume to attempt speculating on the causes of this resuscitation of Cholera; which seems to have taken place nearly at the same time, in several very distant parts of the valley of the Mississippi; though in others, its revival has been and still is progressive. When the cause of Cholera shall be discovered, the laws of its action, its rise and fall and reappearance, in short, its "thousand and one" anomalies and apparent caprices will be unfolded to us. How long a period is to elapse before this great discovery will be made, we shall leave it with others to prophecy. And perhaps we had better submit the whole matter to those favored members of the profession, who have

already received the delicious revelation! This we should be pleased to do, if we knew which among the fovoured recipients to select. But they are not a few, and the means of determining which is the chosen vessel of Apollo, are not quite obvious. Thus, one has smelt the rising clouds of miasmata—another perceived the insensible meteoration of the atmosphere—another has heard the hum of inaudible ærial insects, or tasted the invisible animalcules of the "father of waters" and his countless tributaries—while another has perceived contagion enter at his fingers ends!—All are convinced and confident! We heartily wish ourselves of this happy fraternity; we long to ascend from the regions of anxiety and scepticism—we would believe in *something* if we could—but at present we must be excused either from believing, or from canvassing the belief of others.

It will be a more profitable employment to dedicate ourselves to the treatmentof the disease, and to this we shall proceed.

Of all the epidemics that have ever visited the nations, none has given rise to as many narratives and treatises, as Cholera. In this remote region but a small part of them reach us, yet there lie on our table no inconsiderable number, together with many Reviews and Journal essays, from some of which we propose to make such extracts as will afford our readers a diversified summary of clinical experience.

The first that we shall notice, is from the pen of Mr. James Kennedy, (London, 1832,) an English Surgeon, who spent some time in India, where he witnessed the disease. In *making up* his book, he has moreover, drawn largely from the sources which have furnished materials for so many other works on the same subject—the reports of the Medical Boards of Bombay, Madras and Bengal. As a practitioner, Mr. K. seems to us to be judicious. His magazine embraces but few articles, most of which are well adapted to the treatment of the disease as it appears in this country.

And here we take occasion to say, that the observations of

the physicians of India, and their modes of practice, seem to us to be more valuable to the physicians of the valley of the Mississippi, than those of the medical men of Europe.

Mr. K. recognizes, in Cholera, two distinct types to which he applies the epithets *protracted* and *rapid*. The former he divides into two stages. Symptoms of the first stage.

> "*First Stage.*—The patient complains of a feeling of anxiety, or of uneasiness at the pit of the stomach. After some time nausea supervenes, and the uneasiness changes into a feeling of heat or pain. To these symptoms succeed vomiting and purging, and prostration of strength. The evacuations, at first, consist of the common contents of the alimentary canal; afterwards, of a fluid like rice-water. Occasional cramps are felt in the limbs. The pulse is small, and rather quick. The skin feels a little cold, and the temperature is gradually decreasing. The countenance of the patient is somewhat shrunk, and the features appear sharper than natural.

If the disease be left to itself, or if it continue to advance in spite of the remedies that may have been used, the symptoms increase in severity, and the patient comes to suffer from

> Violent cramps in the upper and lower limbs, and at times in the muscles of the chest and belly. The cramps, in general, are not constant; they recur at short intervals in paroxysms. The vomiting and purging are severe. The coldness of the skin has increased much; it feels moist, and is of a bluish colour about the face, hands, and feet. The palms and soles of the latter appear corrugated, as if they had been steeped in water. The pulse is barely, or not at all to be detected in the wrists and temples. The countenance is ghastly, and expressive of great anxiety. There is distressing thirst, or burning heat or pain in the region of the stomach and bowels.

If the disease be still uncontroulled, it will pass into the second stage.

> *Second Stage.*—Under the increasing debility, the vomiting, purging, and cramps are subsiding, or have disappeared. The patient lies in a state of helpless exhaustion, and is almost incapable of making the slightest movement. He is apparently insensible; but as his senses remain unimpaired to the last, he may be roused to say "Yes," or "No." The pulse is gone, and even the action of the heart is extremely feeble. The surface of the body is deadly cold. The breathing is suppressed, or scarcely perceptible, and the countenance is quite cadaverous."

The American reader, who has seen the Epidemic, must be struck with the identity of the symptoms here enumerated, with those presented by the disease in this country, except in

the absence of the initial diarrhœa, so common in the west, which, however, is often present in Asia.

"In the treatment of the first stage, the primary object of the physician will be to allay the cramps, the vomiting, and the purging. To carry this indication into effect, he should not rest content with the application of any single remedy; it will be accomplished most effectually and rapidly by combination of measures. The warm bath, blood-letting, and a large dose of calomel and laudanum are to be immediately prescribed. If the bath be ready prepared, the patient should be placed in it, and during immersion he may take the dose of medicine, and have the blood-letting performed. One remedy, however, should never wait upon another; the first at hand should be administered first. Their influence upon the symptoms is to be vigilantly watched. As soon as the cramps are subdued, or have received a decided check, the patient with all possible expedition, should be removed from the bath, and placed between *dry* heated blankets. Dry warmth should be further afforded by surrounding his body and limbs with bags of heated sand. If the cramps, &c. do not return, the previous remedies are not to be repeated. New measures are now required to remove debility, and to excite the natural action of the bowels.

The treatment of the *second* stage will be very different from that of the preceding. During the active progress of the first stage, the vital power is considerable, and there is high spasmodic action in various parts of the body, which enable the patient to bear with advantage the loss of blood and the sedative effects of large doses of laudanum; but in the second stage, the patient is in a state of *real* exhaustion, and would consequently sink under the use of these strong measures. Even the warm bath is dangerous to life at this period, and its use must therefore be avoided.

In the second stage there are two principal indications for simultaneous adoption—1st, To remove the deadly coldness of the body; 2nd, To remove the great debility. The coldness must be attacked by the application of *dry* heat. The bags of hot sand should be assiduously applied to every part of the body, and in addition, heated blankets above and below the patient. For the removal of the excessive debility, some of the most powerful stimulants must be had recourse to, as ether, brandy, or other spirits, hartshorn, &c. These remedies are to be continued until the patient finally sinks under the disease, or until reaction is fairly come round, after which they may be gradually dispensed with."

The length of time which elapses in different cases, while the disease is passing from the first to the second stage, is extremely various. When it is *very* short, the case partakes in a corresponding degree, of the *rapid* type, and, consequently the two must be regarded as differing only in the grade of

malignity. The *symptoms*, however, are found to be widely different when we compare the ordinary examples of the two different types.

"RAPID TYPE.—In many instances the attack of cholera commences with very aggravated symptoms: the patient falls suddenly down in a state of extreme weakness, and perhaps temporary insensibility, and the energies of the constitution are so much oppressed by the influence of the morbid poison, that there may be little or no visible attempt at reaction. The pulse almost instantly, or in an exceedingly short period, disappears at the wrist, and the heat of the body rapidly declines. In these cases, cramps, vomiting, and purging, are either completely absent, or an attempt to establish these symptoms is only evinced in slight spasms, and the occurrence of one or two nearly passive evacuations."

During the Epidemic of 1832, in this city, but a few cases of this kind occurred. We have lately witnessed one nearly of this character; and many have, it is said, occurred in Lexington and other parts of the state of Kentucky in localities generally of the healthiest kind.

Our author divides the rapid type into two stages one of *opparent* the other of *real debility*—oppression and exhaustion.

"The chief remedial measure is blood-letting; and here its use is founded upon the fact, that, for a certain space of time after the commencement of the attack, the resources of the constitution are not to be measured by the external symptoms. Apparently the patient is in a state of hopeless debility; (and this will generally prove to be the case, if he be left to the efforts of nature alone;) but when properly assisted by art, the constitution is often enabled to rally, and eventually to recover from the shock. The time, however, in which this medical service may be performed with the greatest hope of success, is unfortunately extremely limited, in some cases not exceeding many minutes after the patient has been seized.

If the practitioner arrive before the blood has deserted the superficial vessels, blood-letting should be performed to the extent of twenty or thirty ounces, in an adult. Then other auxiliary measures will be required. Of these, nothing should supercede the immediate and continued application of dry heat to the surface of the body. The value of this remedy is incalculable, and it has the advantage of being applicable at any period, whereas the opportunity for the abstraction of blood may be soon irrevocably lost. Internal stimulants, as ether, hartshorn, &c. should be also administered, in order to expedite the establishment of reaction. If the second stage, that of real debility, have commenced before the patient is seen, the treatment will consist of dry heat and internal stimulants, without blood-letting.

"In many cases of the rapid type, a complete inversion of the train of symptoms common to the protracted variety of cholera, has been observed during the progress of reaction. As a patient recovers from the stateof stupefaction, or apparent exhaustion, into which he was hastily precipitated, and as he graduallyg athers strength, it may happen that cramps, vomiting, and purging, will then be developed in the first time. This proves, as it were, by analytic evidence, that cramps indicate a comparatively mild form of the disease. If the cramps become severe under this new arrangement of the morbid phenomena, we must resort to the curative means hitherto recommended for the spasmodic stage and its consequences."

On the subject of the warm bath in this type of Cholera ,our author has the following observations, which we recommend to our practical readers.

"In the abstracts of the Indian Reports, instances may be observed where the use of the warm bath in the second stages of acute cholera seemed to hasten the death of the patients. Instances of a similar character might be multiplied by referring to facts extraneous to this volume, but a few will be sufficient for our present purpose. That moist heat should have a dangerous influence on patients in a state of *real* debility, appears very natural, when it is recollected that even persons in health will faint* after long immersion in a bath at a high temperature. In the treatment of cholera, the temperature of the bath was generally above 100 degrees, and frequently was raised to 110 degrees, in the hope that this strong heat might counteract the rapid loss of the natural warmth of the body. In our opinion, the warm bath, or any other form of moist heat, should never be used in acute cholera, unless at the commencement, or during the prevalence, of severe spasmodic symptoms."

Mr. Kennedy is no great friend to opium in Cholera. He thought it much abused in India. It was often given in large doses throughout all stages of the disease, with or without brandy, and very often he thinks did harm. In the first stage of the protracted type, combined with calomel, he found large doses beneficial, and thinks the utility of that powerful narcotic nearly limited to that stage. We do not entertain a doubt that opium is far more benificial in the early than the latter stages of Cholera.

Our author's views in regard to blood-letting in cholera meet

* "If a patient in acute cholera be placed, daring the stage of real debility, in a warm bath, he will probably faint, and never recover from the fainting fit thus induced."

our entire approbation. He first considers the circumstances that contraindicate it. Thus it should be avoided—first, towards the termination of the first stage of the protracted type; second, during the whole of the second stage; third, in the rapid type during the period of debility. In general, when blood-letting would be improper, such is the state of the circulation, that blood will not flow, but there are exceptions to this rule.

"Blood-letting, the opportunity for performing which is so precarious, is not indispensable to the recovery of a number of patients who are subjected to cholera in either type; but patients who have been freely bled, in general recover more rapidly than those who have not. The blood-letting appears to cut short the attack in a decided manner, and afterwards, with the establishment of reaction, the secretions which had been suppressed, the heat of the skin, the pulse, and the appearance of the patient, gradually return to their healthy standard. In cases where recovery is slow, and more particularly in such as have not been bled, reaction is occasionally the forerunner of febrile symptoms and derangements of the bowels, which impede the progress of the cure, and require to be treated on the general principles of medicine."

Mr. Preston, of Madras, has given phosphorus in the stage of "real debility," (exhaustion) and entertains a very favorable opinion of its powers. It is an exceedingly strong stimulant. He has reported two cases in which it was decidedly successful. We should think it deserving of attention, if indeed any thing can be said to merit a trial, in the mortal stage which it is designed to combat.

Next follow remarks on emetics, blisters, magnesia, castor oil, alkalies and acids, none of which, in the opinion of our author, deserve much confidence, and should never be substituted for blood-letting, laudanum, calomel, the common stimulants, and moist or dry heat, as the stage or type of the malady may require.

Dr. Spencer, of the state of New York, in a communication to the Medical Society of that state, February, 1833, has in reference to the first stage of Cholera the following propositions:

"1. The epidemic influence being thrown upon the exhalent tissue of the small intestines, renders it highly susceptible to the action of irritants, so that the imperfectly digested food or mild laxatives often excite profuse evacuations, and there is thus produced a disposition to violent disease from the common exciting causes of diarrhœa.

2. The stomach being weakened in its function, digestion is imperfectly performed, and at times almost suspended.

3. The liver responding to the stomach from its habitual sympathetic relations with that organ in health, falls into a state of torpor, and bile is no longer secreted."

Dr. Spencer lays great stress, in his pathological views, on the irritation, increased determination to, and augmented discharge from, the exhalent tissue of the mucous membrane. It often amounts to quarts, and, according to our author, even gallons in a few hours. He compares it, as to its origin and effects, to mucous hæmorrhage. The chief difference, in his opinion, lies in the loss of the serum of the blood in one case, and the serum and red globules in the other. From this loss he deduces the stage of collapse—a state of suddenly induced vascular inanition. Let him speak for himself.

"We have now examined every source but one, without finding any from which these large serous discharges can be derived. The only one remaining is the exhalent tissue of the intestines, and it is believed we may now draw the inference that the exhalents are the floodgates by which the vital fluids are thus rapidly drained from the body. If, then, these vessels give exit to the discharges, may we not infer that the *exhalent tissue of the bowels is the proximate seat of disease in the second stage*, as well as in the first, as already proved. In the exhalents, then, we have a natural outlet to these fluids, and of course should expect no lesion of the membranes when the patient died in collapse—a *fact* most fully proved by the universal testimony of the profession, who have made a record of their dissections, throughout the globe. It is believed that the *essential phenomena yet to be accounted for, can be traced to these discharges as a cause*, and if so, the conclusion seems irresistable that we have correctly arrived at the proximate seat of disease. If, then, the proximate seat of disease is the same as in the first stage, when all will admit the disease is serious diarrhœa, shall we change the name and call it "cholera," because an indigestible

meal or a debauch greatly increases these serous discharges, and vomiting supervenes? In what has preceded, we have noticed only the serous evacuations, while the *colour* has not been accounted for. The first effects which would naturally result from these discharges would be to wash out whatever might be in the alimentary canal at their commencement. At times these are yellow, or they look like *dirty water*, throughout the disease, and the discharges in these cases have a feculent smell. Dissections have shown about five cases in one hundred in which the colon was distended with feculent matter in those who have died of this disease, and this circumstance rationally accounts for such occasional appearance of the discharges. If part of the food remains upon the stomach, or the chyle remains unabsorbed, this gives colour to the evacuations, which sometimes resemble milk and water, or thin gruel. The follicular glands at times, on dissection have been found to exude a milky fluid, which may likewise give this or the rice-colour to the serous discharges. Rice-coloured evacuations are often observable in the chronic intestinal diseases of children. The red tinge seen at times in the latter stages of this disease, and in the intestinal contents on dissection, must result from the admixture of red globules of blood with the serum of the discharges. *Colour* would, therefore, appear as an *accidental* circumstance, while the serum of the discharges is *uniform*, and in a large proportion of cases almost colourless.* When the pathological relations to other diarrhœal affections are traced, serous discharges will be found to constitute the source of danger in all."

Our author proceeds to inquire, *seriatim*, into the effects of this profuse exhalation, upon the mass of circulating fluids, the heart and vessels, the respiration, the capillary functions, the secretions and evacuations, the absorbent system, and the functions of animal life. Our limits do not permit us to follow him through his ingenious reasonings on these different points, and we shall proceed at once to his—

"*Recapitulation.*—From a review of what has been advanced on the nature of the second stage, its essential pathology may be summed up in a few propositions.

1. The disease essentially consists in this stage, in a determination of fluids to the inner surface of the small intestines, diverting the respiratory, perspiratory, and urinous discharges, with their natural salts, from their usual channels; *and discharging them through the intestinal exhalents*, rapidly emptying the blood vessels of their contents, and changing the relative proportions of the remnant of circulating fluids.

2. That the failure of the functions of the heart, lungs, capillary cir-

*Scott.

culation, and various secretions, results from direct depletion, depriving those organs of their accustomed stimulus.

3. The absorbent system is rapidly taking up the adipose and waste parts of the body, to supply the failing resources of the heart, and thus results the rapid emaciation.

4. The spasms of the voluntary muscles, and those drawn into contractions in the act of vomiting, by compressing the intestinal exhalents, tend to arrest the discharges; and by aiding the return of the venous circulation, stimulate the heart to redoubled exertion, giving a centrifugal direction to the circulation, thereby making a metastasis of the exhalation from the inner surface of the bowels to the skin.

5. That a striking analogy exists between this disease and hemorrhage, differing only in its effects upon the constitution, from the circumstance of its changing the relative proportion of the ingredients of the blood."

These views are highly plausible, but they are met by the unquestionable fact, that many cases prove fatal, in which the discharges are by no means profuse. Such must have occurred in the practice of every physician. We have lately met with two, in which the patients passed rapidly into fatal collapse, with inconsiderable evacuations from the stomach and bowels, and without any distension of the abdomen, that could suggest that much fluid was accumulated in those viscera. Indeed, we are convinced, that the primary impression of the remote cause, is made upon some part of the nervous system, and that the great infiltration of serum into the bowels, is a secondary affection which, however, may, when it occurs, be the cause of much that he has assigned to it.

Dr. S. entertains just views of the relation between epidemic and endemic Cholera. We shall transcribe his summary of the symptoms which respectively characterize them:

"The epidemic almost universally commences with diarrhœa, of several hours or days' continuance.	Cholera morbus is scarcely ever preceded by diarrhœa.
The commencing diarrhœa of the epidemic is devoid of bile.	If diarrhœa precedes cholera morbus it is generally bilious.

Water is the principal discharge in the early period of the epidemic.	Bilious matter is the principal discharge of cholera in its early stage.
If bilious discharges come on in the epidemic, the patient is considered safe.	If the bilious discharges cease in common cholera and watery stools come on, there is great danger.
The epidemic as well as the common diarrhœa is a disease of all climates and all seasons.	Cholera morbus is peculiarly a disease of hot weather, and warm climates.
Vomiting is by no means a uniform symptom of the epidemic.	In common cholera, vomiting is a uniform symptom, when absent called bilious diarrhœa.
The epidemic is always greatly aggravated by changes of weather from warm to cold.	Cholera morbus is increased by hot sultry weather supervening upon cool.
In the epidemic, the hepatic function is suspended from the first dawnings of the disease.	In common cholera, the liver is actively excited and the acrid bilious matter secreted becomes the exciting cause of the disease."

The ninth chapter of our author's work relates to the treatment of the first or diarrhœal stage. His instructions are, in general, judicious; but as we have, in former numbers, entered fully into this subject, we shall not dwell upon them. His opinions in regard to drinking, correspond with those already put forth in this journal:

"Notwithstanding the high authority by which brandy has been recommended as a preventative of the attacks of this disease, I am fully satisfied, that ardent spirits are not only unnecessary, but injurious to those previously unaccustomed to their use. To those, however, habituated to its daily employment, it may be proper to say, that a sudden suspension of the habit during the epidemic, might expose them to hazard, but great moderation should be exercised, since the slightest excess is liable to bring on the severe grades of the malady. Malt liquors, in moderate quantity, from the carbonic acid they contain, afford a grateful stimulus to the stomach, and aid the process of digestion. Port or Madeira wine may be advantageously employed for the like purpose, when the function of the stomach is weakened from previous disease, or when great oppression is produced by the effects of the epidemic influence. Under such circumstances, wine produces a temporary aid to digestion, especially if a meal remains long unchanged upon the stomach."

We cannot too often or too strongly, impress on our readers and the public generally, the necessity of attending to the first stage of Cholera. All experience has shown, that it is, then, a disease which is easily arrested, while, if suffered to pass beyond that stage, it becomes one of the most unmanageable. The moral power of the profession should be put forth on this point. Every physician should feel it a sacred duty, to raise his voice against the neglect of early symptoms. He may save many lives without making one prescription, by warning his patients of the necessity of doing something and refraining from many things, when they first feel indisposed.

Our author condemns purging in the early stages of Cholera, a prohibition in which we entirely concur, unless it be effected by calomel or the blue pill or rhubarb conjoined with ipecacuanha. Even then, it is not the *purgative* effect of these medicines, on which their efficacy depends; but their action on the liver, the function of which is impaired or suspended, and must be restored, or the disease will advance and the patient die.

In the treatment of this stage of the disease, our author lays deserved stress on the use of emetics. They should act promptly and efficiently. Tartar emetic from its action on the bowels, is not so proper as ipecacuanha and the sulphate of zinc.

"This occasional effect of emetic tartar renders it somewhat objectionable, and it is believed that the sulphate of zinc and ipecac, as recommended by Dr. M'Naugton, may be safely and advantageously substituted in most cases, where the diarrhœa has been of considerable standing. Sulphate of zinc 5 grs., combined with 20 or 30 grs., of ipecac, may be given in a wine glass of warm water, and if not vomited in 8 or 10 minutes may be repeated, or 20 grs. of ipecac alone may be repeated every few minutes till full vomiting is produced. The eupatorium, from its emetic, diaphoretic, and tonic properties, is admirably adapted to the cure of this disease, and a strong infusion of this article or chamomile may be very advantageously administered to promote the operations of the emetics."

We have lately been informed, that in the recent visitation at Georgetown, Kentucky, the salt and mustard emetic of the Hindoo practitioners, was used with admirable effect. It was given in anticipation of the compound of calomel and opium, which was found so beneficial in this city, in the first stages of the epidemic last autumn.

Chapter 10th embraces the treatment of the second stage. The leading indications are—

"1. To arrest the intestinal discharges.

2. To make a transfer or metastasis of the serous discharges from the exhalents of the bowels to those of the external surface.

3. To restore the lost balance and healthy performance of the various excretory and secretory functions.

4. To support the powers of the system, and combat incidental symptoms.

The first three indications may in a large proportion of cases be simultaneously fulfilled by a combination of active emetics and sudorifics. To these the disease yields with great promptitude, provided a dose sufficient to act efficiently is employed. Nothing can, however, be more improper than the exhibition of half doses of emetics in this stage, since every thing depends upon making a prompt and decided impression upon the disease. If the operation of emetics is prompt and active, all the energies of the system seem to be aroused —the face resumes its wonted flush, a free warm perspiration starts from every pore, and the patient is comparatively safe."

One of our author's friends, Dr. Benjamin Palmer, for the purpose of arresting the profuse alvine evacuations, or of obviating their effects on the circulation, resorted to ligatures to the extremities, as in cases of hæmorrhage, and found them serviceable.

The following extract will present our author's views of bloodletting in Cholera:—

"If the pathological views of the disease presented be correct, bleeding may find an appropriate place among our remediate means, but its indiscriminate use must be exceedingly hazardous. The operation of this remedy in the epidemic, must be very similar to its action in hæmorrhage, and if employed before the action of the heart and arteries is prostrated by the severe discharges, I can discover no good reason why it is not equally safe to unload the blood vessels by the lancet, as to have them thus rapidly emptied by a continuance of the large serous evacuations. It is thought that by bleeding the patient from a large orifice, until faintness is induced, the discharges may be thus stayed, and by directing our remedies to the restoration of the various secretions, the patient may be cured.

Some medical practitioners have very successfully treated the disease in this manner, but it must be obvious that the remedy is applicable only to the early part of this stage, when the pulse remains vigorous; a period which often passes before professional aid is called. If the pulse has, however, failed, and the system is rapidly approaching the collapse, or this actually exists, no good reason can be discovered

for using blood-letting in this disease, any more than in any other malady, when the vital enegies have been prostrated by direct depletion. If we found a man nearly pulseless, from natural hæmorrhage, or from the division of any artery, we should hardly be considered rational, if we undertook to bleed him to arouse the system. Now, it is thought equally proper in this case, as in the collapse of the epidemic, when, as frequently happens in rather slow cases, the patient has already lost a quantity of fluids, equal in volume to the estimated amount of blood ordinarily circulating in the heart and blood vessels. Those cases which occasionally occur in this epidemic, and which often happen at the onset of febrile diseases, in which extreme coldness results, from an oppression of the sanguiferous system, resulting from a congestion of the fluids, in the internal organs, unattended with evacuations, are often benefitted by bleeding. But this collapse should be carefully distinguished from that resulting from large evacuations, the principles of treatment being widely different."

Dr. Spencer seems to attach but little importance to the powers of calomel in this malady. The liver in his opinion is secondarily affected. It is the copious exhalation from the bowels that has suspended the action of the liver. But, admitting the accuracy of this *speculvtion*, may not calomel do good? If an excited state of the mucous membrane can divert *from* the liver, may not an excited state of the latter, attract the blood from the former? He seems to be afraid of the *purgative* effects of calomel; but we have not witnessed them, and if apt to occur, might they not be prevented by the addition of opium?

"Given in minute doses, however, it sometimes acts beneficially in allaying irritability of the stomach, and exciting a healthy, peristaltic motion of the bowels."

Our own experience does not warrant a preference for minute doses of this medicine. On the contrary, we have found large doses, even 30 or 40 grains, at more distant periods, decidedly preferable. They subdue the irritability of the stomach and bowels, more successfully than small portions; and, instead of purging, not unfrequently suspend the diarrhœa, by allaying the irritation which excites it.

The 11th chapter is devoted to the stage of collapse. The indications are:—

"1. To restore to the heart and blood vessels the stimulus of distention, by supplying them with the fluids, and neutral salts, of which they have been deprived.
2. To sustain the sinking powers of life, and combat accidental symptoms."

Our author's pathological views make him a decided advocate for the liberal use of water, and incline him to the saline practice recommended by Dr. Stevens, of the Island of St. Thomas, in the fevers of that place, and afterwards for Cholera in London. After stating that gentleman's recipe, which we have already laid before our readers in a former number, and shall presently repeat, he gives another, suggested and, it is said, used with advantage, by Dr. Harris, of Philadelphia, which we shall transcribe.

℞. Super-Carb. sod. 3ı.
Mur: sod. ℈ı.
Chlor: pot. 8 gr., mix.

"A simple solution of common salt, or combined with the other neutral salts, with starch, as the vehicle, may be used as an enema, which should be drawn off with a tube, and repeated at like intervals. Should they tend to run off, they should be retained by the means recommended in the second stage. If, however, these neutral salts are found to keep up or augment the serous discharges from the bowels, they are obviously contra-indicated, and aqueous fluids alone, or slightly impregnated with nitric acid, as advised by Mr. Annesly, or combined with camphorated spirits, should be used. Even these ought likewise to be employed according to the effect they produce, requiring at times to be sparingly used, or their employment suspended, as in the second stage, when the stomach and bowels need to be tranquilized."

Dr. Spencer seems to lean to the practice of injections into the veins in this state of Cholera, and gives some reasons why as he thinks, they have not been successful. He suggests that the fluid should be thrown in very gradually; and intimates that simple water might perhaps be safer than a saline solution and equally beneficial.

Opium, in the opinion of our author, is but little indicated in this stage, and often proves injurious. Among other bad

effects he supposes it may contribute to diminish the secretion of urine.

We need not dwell longer on the treatment of the state of collapse. Like most other physicians, our author seems to have but little confidence in any thing yet proposed. We believe the stage of confirmed collapse or approaching death, to be as little and as much, under the controul of medicine in this disease, as in any other. When preceded by copious evacuation, it is perhaps, scarcely ever cured. When suddenly induced, it is more manageable, and should, as we think, be treated with a stimulating emetic, venesection, and the partial and sudden application of ice or iced water.

The last chapter is devoted to the nature and treatment of the consecutive fever. We shall dwell upon it no longer than to make the following extract:

"The urinary secretion being generally suspended in this fever, it becomes a matter of paramount importance to restore it, or fatal coma too frequently supervenes. By combining these three articles, we have one of the most active anti-inflammatory combinations. A powder of calomel, 1 or 2 grains emetic tartar, ¼ gr. cream tartar, 8 or 10 grs. may be given every two or three hours, at the same time spts. nitre and mucilages are employed."

We open another New York Cholera book, consisting of a series of letters from Dr. Martin Paine to Professor Warren, of Boston, written in 1832, while the epidemie prevailed in the former. As might be expected, it is of a desultory character, and we shall not attempt its analysis.

As every fact relative to the first stage of Cholera is of paramount importance, we copy the following:—

"Although the predispostion to this epidemic is generally developed by some of the premonitory symptoms which I have indicated, it occasionally happens that the attack is very insiduous. The tongue

may be clean, and of a healthy appearance: the evacuations at first bilious, and unattended with pain; perhaps little or no vomiting and no evidence of danger in the countenance; yet I have known a sudden transition of these auspicious appearances to an array of the most malignant symptoms.

I have said but little in respect to the state of the tongue as an index of the disease, and still less of the pulse, and skin, and secretion of urine. They are so variously affected, under apparently the same circumstances, that they cannot be assumed as criteria. The tact of the physician, therefore, must convert them to the best advantage in each individual case."

Dr. Paine's report of the efficacy of calomel differs widely from that of Dr. Spencer, whose work we have just reviewed, and seems to us so correct and important that we are tempted to place it before our readers. It corresponds most strikingly with our own experience, and that of the physicians of Cincinnati generally.

"In regard to *calomel*, my own experience is sustained by that of our best physicians. From the particular irritability of the mucous membrane, and the profuseness of the discharges, the prepossessions of many physicians, who now regard it with a sense of dependence, were adverse to its exhibition. The little encouragement, however, which they derived from other remedial agents, directed their attention to the declaration of foreign physicians, that this medicine not only allays the irritability of the mucous membrane, but induces that change of action which is necessary to the re-establishment of health. I may safely assure you, Sir, that our best practitioners now employ calomel in doses of 10 to 30 grains, with more confidence than they repose in all other remedies. Either with or without small quantities of opium and camphor, according to the existing state of the serous evacuations, it seldom fails to allay the irritabilty of the mucous membrane, and of the system generally; to mitigate or remove the spasms; and if the case be susceptible of relief, to convert the discharges from the appearance of rice-water to that of the green confervæ, or the not infrequent blackness and consistence of boiling tar. This transition is nearly a sure omen of a radical change through the whole system."

Dr. Rowe of the Greenwich Cholera hospital, used with much advantage an ointment composed of 1 pound of strong mercurial ointment, 7 ounces of Cayenne pepper and 7 ounces of camphor, applied over the whole surface of the body, with a brush, and frequently repeated till reaction or a salivation took place.

"Another ointment has been compounded by Dr. Rhinelander, of the Crosby-street Hospital, and is prepared in the following manner: Take of red pepper and camphor each half a pound, simple ointment one pound, muriatic acid one ounce. Triturate together the powdered camphor and pepper, adding the acid. Pour the mixture into the melted ointment, carefully stirring it. The ointment is very freely applied to the whole surface, and the skin afterwards covered with hot chalk. In this preparation, the active principle of the pepper is evolved by the acid and it possesses, therefore, the advantage of being more stimulating than the other, but it wants the specific property which is imparted by the mercury."

Dr. P. condemns the hot bath. He observed an extraordinary epigastric heat. In one case the thermometer rose to 106 degrees. He thinks ice to that part and to the muscles affected with cramps, a better application than mustard. He disapproves of high internal stimulation and of much opium, preferring the sulphate of morphia to that drug. Dr. Caldwell of Montreal, in a letter to our author, informed him:—

"That he employed as a cathartic, after the exhibition of calomel in the earlier stages of this disease, tart. potassæ zij. in a little warm chicken broth, which he repeated every second hour until it operated freely. "Nothing," says that eminent gentleman, "seemed to allay the gastric irritation so well as the solable tartar. In many instances it seemed to act as a charm, and I do not know a single instance of any one, who went through the influence of this treatment, that was subsequently attacked with Cholera."

Our author of course denies to camphor any specific power, but thinks it a useful adjuvant. He tried tobacco injections in two cases, as practised by Mr. Baird, of England, but found them injurious. In two others, he knew of the use of injections of a strong solution of alum (*Sup. sulph. alum, et pot.*) with no better effect.

"*Cupping* and *leeching* have had a full proportion of our attention. They are less salutary than general blood letting, when it is an object to produce an impression on the whole system, or for the relief of high vascular action, whether local or general. In Asphyxiated Cholera, where there exists more than the usual determination of blood to the head, they have been found useful, and contribute to the relief of oppression at the precordia, and some of the varieties of abdominal distress. Like general blood letting, the local abstraction is often indispensable, in the treatment of some of the consecutive diseases."

Venous injection was tried and found unsuccessful. It was employed in numerous instances in the hospitals and in private practice. So of inhalations.

"The *oxygene* and *nitrous oxide gases* have been tried at the Greenwich and other hospitals; but I am informed by the gentlemen connected with three of those institutions, that they have obtained no benefit from their use,—and that the blueness of the skin was not even influenced."

Dr. Paine's letters contain a variety of speculations on the pathology, and many details on the morbid anatomy of Cholera, which, intending this as a clinical review, we shall not attempt to lay before our readers. Among the latter, however, we find one which seems new, and deserves to be recorded on our pages. It is the presence of oil in the blood, which was observed in several instances. It was first noticed by Dr Gale, who thus speaks of it, in an athletic and intemperate negro, who died in one of the Cholera hospitals of New York.

"The oil, to which I have adverted, was remarkably abundant in this subject. It covered the blood from whatever part abstracted, and floated in small and large globules on the surface of about one ounce after standing an hour in a vessel, into which it had been received from the heart. There were two globules of the size of a common pea; the others were very numerous, but no larger than a grain of mustard. It was found in the large and small vessels—it was very distinct in the brain—it was as obvious in the kidneys, and in every part particularly examined. It resembles olive oil in appearance and consistence."

This oil was doubtless absorbed from the adipose tissue during the progress of the disease.

In a pamphlet on the history and treatment of the Epidemic, as it appeared at Vienna in 1831 and 1832, Mr. J. F. Fergus, a British surgeon, has communicated to the profession a neat

expose of its symptoms and the method of cure found most successful. We shall take no notice of the former, except as connected with the latter. On the exciting causes of Cholera, Mr. Fergus has a variety of remarks. The following facts are worthy of being recorded.

"Fear is another exciting cause of the greatest force. A Dr. Bochie was sent into Hungary to treat the cholera, where he was in a short time attacked, and died. He had left a mistress at Vienna. A brother of the deceased, meeting the girl in the street, said, "Your friend has died of the cholera." The girl was much shocked, and before she reached her home she was seized with violent cholera, and died in six hours.

Going into the hospital one day, I found a strong healthy woman, who had been at the moment brought in. She had just vomited a large quantity of half digested flesh. On asking her to what she attributed her illness, she said that her master had a friend who had been taken to the cholera hospital, and that he had sent her thither to inquire how he was. As she was going along she was in great fear she would catch the cholera at the hospital; but long before she came near it, she felt a sudden giddiness, became faint, and vomited. This proved a very severe case of the first form of cholera."

In Europe, men are much more separated into castes or classes, than in America, where the differences are often almost nominal.

"Galizia is inhabited by Poles and Russneaken, Jews and German colonists. The Poles and Russneaken, especially the latter, are very badly fed and lodged. They seldom taste beef or mutton, living mostly on a coarse rye bread, cheese, butter, milk, and sometimes a little fat bacon. They live with their cattle, under one roof, only separated from them by a partition. They are very dirty in their houses and persons, and are generally surfs. The Jews are still more filthy than their neighbors the Poles; their houses are much more overcrowded. But they are generally warmly clothed, and otherwise have more of the comforts of life. They are generally employed in commerce.

The German colonists are clean, and live much better in every respect than any of the others; they are occupied principally with the arts, commerce and farming. These three people live in separate villages, but which are often so close together as to form but one town, or "marktfleck," as it is called. When the cholera broke out, about one in every eight was seized amongst the Poles and Russneaken; about one in every forty amongst the Germans. The Jews, according to circumstances, approached more to this or to that extreme.

The proportion of deaths in those taken ill, remained always much the same. At least the difference in favour of the Germans was not very marked."

The following are the forms or divisions of Cholera, which our author observed at Vienna. Each required a different treatment from the other.

"1. The highest degree:—Seizure sudden; evacuations almost or altogether wanting; cramps most severe; ends in most cases in a few hours, the action of the heart often becoming imperceptible before consciousness is lost.

2. The most common form:—It presents the greatest variations, and the most numerous succession of symptoms, which at one time resemble more those of the 1st, and at others more those of the 3d form. Almost always a prodrome; ends fatally by paralysis, the consciousness being lost; respiration the last vital function which ceases.

3. Often no prodrome; comes on with sudden and copious evacuations. The patient sinks rapidly and silently, without any violent symptoms."

The style of Mr. Fergus is so compact, that we shall not attempt to abridge what he says on the treatment.

"*Treatment of First Form.*—In the most violent cases of the *first form*, all treatment whatever was found unavailing. Bleeding always produced relief, and if, by means of ipecacuanha, or other emetics, or by ice, vomiting was produced, the patient immediately found himself much better. But, in most cases, it was impossible to produce vomiting by any means, and the patients were all lost.

If those symptoms, described as the *prodrome* of cholera, had come on in consequence of exposure to wet or cold, the best effects were seen, if the patient went into a warm bed, took a dose of Dover's powder, and drank an infusion of elder or chamomile flowers, until full perspiration was produced. If they had been caused by an excess at the table, if nausea came on, if the diarrhœa became very frequent or copious, with cold extremities or cramps, the greatest advantage was obtained from an emetic of ipecacuanha; afterwards an infusion of the same root, 1 scruple to 6 ounces of water, with 10 or 20 drops of laudanum, a table-spoonful to be taken every hour. In a day or two, when the purging still continued, the infusion of columba was substituted for that of ipecacuanha, and the quantity of laudanum increased. Under such treatment it was very rare that these symptoms went further.

Treatment of Second Form.—If the patient was strong, the very best effects were seen from bleeding; and then the administration of a

large dose of ipecacuanha, which did great service in all cases but those where, from the patient's excessive weakness, it was contra-indicated. If the first dose of one scruple did not act, it was repeated, and in the interval a few grains of musk and camphor were given, which were found to assist the action of the ipecacuanha. These were continued till the temperature and pulse began to rise, and the skin to assume its natural colour. In the same circumstances the use of ice was followed with great relief. The patient received it in pieces as large as he could swallow, and his skin was rubbed with large pieces, and afterwards well dried with rough cloths, and the patient put in a warm bed. The first effect of the ice was to produce vomiting, which was soon followed by increase of the temperature, &c. Even in cases where the thirst, cramps, and oppression of breathing, were most violent, and the skin already cold and blue, with no pulse at the wrist, a reaction was produced by the employment of these means.

Treatment of Third Form.—In this form, the bleeding, ipecacuanha, and ice did more harm than good; most benefit was obtained from opium, by the mouth, and in injection with yolk of egg, camphor, musk, and especially the infusion of arnica.

Sinapisms was found of great advantage in every form; they were applied to the calves of the legs, and to the pit of the stomach, when the cramps and pain were severe. When the abdomen was tender to the touch, leeches and warm fomentations had a good effect. Vapour baths, hot sand, hot baths, were seldom productive of much good. In a few cases, a warm bath, in which caustic alkali had been dissolved, produced a reaction. Hot and stimulating frictions relieved the cramps in the extremities, but had no effect in raising the temperature.

Here then stand, on the one side, bleeding, emetics, ice and sinapisms, and, on the other, opium, brandy, camphor, oil of cajeput, sulphuric ether, hot frictions, baths, &c. These last were, at the commencement of the epidemic, almost exclusively employed. But in so far as the former were found to stop more effectually the course of the disease, to produce reaction, and to give an active character to those congestions which afterwards developed themselves, the use of the latter was almost unanimously abandoned by the physicians of Vienna, except in those cases of exhausting diarrhœa, or vomiting, described as the third form of cholera; for though they sometimes put a stop to the symptoms of the disease, and even roused the patient out of those desperate states of congestion or paralysis in one or two cases, yet their use was always followed by the sopor, and the worst forms of typhoid fever. Even in the third form they were given only in small doses, never in such quantity as was necessary to produce reaction in the first and second forms.

With the exception of the employment of ipecacuanha and ice to produce reaction, the physician must be guided by the general rules of practice, as there is perhaps no disease in which the

treatment must be more varied according to the circumstances of the case.

"*Treatment of the Sequelæ of Cholera.*—When the bilious vomiting and hiccup were severe and long- ontinued, the best remedy was sub-nitrate of bismuth and ext. of hyosciamus; three grains of each were given every two hours till relief was obtained. Effervescing draughts. The sulphuric and nitric acids, in decoction of salep, or althea, were often equally useful. When vomiting and diarrhœa returned, during the convalescence, they were treated with success in the same way as the prodrome.

The patients were bled with the greatest advantage in those cases where the congestions were clear, and accompanied with strong reaction. In other cases, where the patients, on coming out of the cholera, fell into a state of stupor, or incomplete nervous fever, it was often difficult to determine if depletion or stimulants should be had recourse to. The one or the other was most successful, according to the individual circumstances of the case.

When the symptoms of encephalities came on, leeches to the temples, ice in bladders to the head, and sinapisms to the lower extremities; produced the best effects. In the few cases of inflammation of the lungs, tartar emetic, &c, were employed. When the belly was painful to the touch, leeches and sinapisms were employed; these were neccessary in almost every case.

When, after several days, typhoid symptoms showed themselves, such as delirium, black crust on the tongue. &c., no more good was derived from the continuance of the antiphlogistics—but, on the contrary, the most marked good effects, from small and frequent doses of musk and camphor, and opium, with infusions of arnica and valerina. When the patient remained weak, and had frequent returns of purging and inclination to vomit, the best effects were seen from an infusion of columba, gentian, cinchona, or other tonics, with a few drops of laudanum, and a diluted mineral acid. For a long time the least exposure to cold or wet, or the least excess in eating or drinking, brought on a return of the diarrhœa. The constipation, which often followed cholera, was best removed by a few doses of castor oil.

It is worthy of remark that the physicians of Vienna lay great stress on emetics and in sudorifics, and that *calomel* is not once mentioned as a remedy!

In a pamphlet of 30 pages Dr. John F. Henry, has embodied the results of his observation on the Epidemic of 1832, in this city. The whole work was a letter to his friend Professor Short, of Lexington.

Dr. Henry has launched out boldly upon the *ætiological* gulph, and discovered, as he believes, that the cause of Cholera is "*identical* with that of intermitting, remitting, and malignant fevers." As this hypothesis inculcates cleanliness—public and private, and the avoidance of night air, we think it not right to travel over the proofs which he has adduced in its support, for the purpose of showing their inadequacy. A corollary from this doctrine is set forth in a cheering prophecy, that Lexington, being little infected with misasmatic exhalations, would be but slightly visited, in the late visitation, however, she lost about 400, or a 15th part of her entire population, though more than half fled to the country, at the onset of the Epidemic. If it had depended on miasmata, from putrefying matters—animal and vegetable, how could this have happened?

We pass with pleasure to the second half of Dr. Henry's letter, which is devoted to the symptoms, prevention and treatment of the Epidemic.

"The disease in full developement was generally preceded by the premonitory diarrhœa. This I think was the most frequent mode of attack, but it was not always the precursor. In some very violent cases there was no diarrhœa during the whole progress of the attack. In one very remarkable case there was *no purging, or vomiting, or spasms.* He complained of a deadly intense pain in the epigastric region. His flesh was cold, that when you grasped his arm, you had that sort of chilling sensation which is produced by touching a dead person: the surface was bathed in a profuse clammy sweat, and his pulse was very feeble, and at times almost imperceptible. He remained in this state forty-eight hours, during which, there was no discharge of urine. After this protracted cold stage, reaction commenced; the pulse rose; the sweats became warm; the urinary secretion was re-established, and convalescence advanced slowly, though steadily. I saw three other cases in which the epidemic wore the livery of bilious cholic. There was obstinate constipation; but there were violent spasms of the intestinal tube, in one instance confined to the small intestines, and in the others involving the colon: but these cases could not be mistaken; they were but other modes in which the epidemic influence displayed its power: the same want of biliary and

urinary secretion existed as in the ordinary mode of attack; and the remedies did not essentially differ from those employed in combating the common forms of disease.

At the same time, that these forms of cholera were desolating the city, I saw bilious fevers of every grade, from mi'd remitting to malignant. In others, on whom the influence was less operative, there were slight biliary derangements, indicated by nausea, or simple want of appetite, and by a torpid or sluggish condition of the bowels. Others had dysenteric symptoms with or without fever: women menstruated more freely, and at irregular times: but what was very remarkable, and different, I think, from what has been observed elsewere, I neither witnessed nor heard of any abortions during the whole period of the epidemic. Some cases that commenced as febrile attacks ran speedily into cholera; and, in my own observation, most generally into the stage of collapse; and others that commenced with all the symptoms of cholera, fell back into the milder forms of disease. There seemed to be a *scale* of danger, running as it were from simple biliary derangement to cholera in its worst form; indicated by the sudden supervention of diarrhœa, vomiting, prostration of strength, and pulselessness. This scale might be constituted in the following order; biliary derangement without fever—with fever of a mild type—of a more malignant grade—vertiginous state of the senses of seeing and hearing—numbness of the extremities—with costive bowels—with diarrhœa—with vomiting—with cramps—with strong pulse and warm skin:—with the preceding symptoms, but the pulse weak and vacillating, the heart having no power to send the blood to the extremties, or to the surface, which were cold, clammy, corrugated and livid or blue. Another scale might be formed, from observing the alvine discharges: where these contained the slightest admixture of bilious matter the danger was remote; and this danger was always in proportion to the thinness, on the one hand, and the approximation to the rice-water colour, on the other. All these discharges were bad—but worse in proportion as the colour became white."

The method he found most successful in the early or diarrhœal stage, was that which excited the functions of the skin and liver. The experience of our physicians generally, was to the same point. The following extract will show the means which he employed.

"In the treatment of diarrhœa, you should have the feet bathed in hot water, rendered stimulating by the addition of salt or mustard: you should then order the patient to bed; have hot bricks applied to the extremities, to the small of the back, and to the pit of the stomach. He should be covered warmly, and when free from nausea he should drink abundantly of warm tea of any of the sudorific plants; some

prefer eupatorium, but I have found equal advantages from balm or sage, or table tea. In addition to these means, if the deficiency of temperature be great, sinapisms are ordered to the extremities, to the small of the back, and if nausea exists, to the epigastrium, and indeed to the whole abdomen; to these are sometimes added pulverised capsicum; or they are made more stimulating by being mixed up with spts. of turpentine, instead of hot water or vinegar. By all of these means, or such as you deem necessary in any particular case you restore the heat of the surface, and produce a copious perspiration, which you keep up until the disease is brought under the control of medicine; which consists for the most part of some preparation of *mercury* and of *opium*—ten grains of calomel, and one of opium, repeated every hour until the discharges from the bowels were arrested; and the calomel alone, in ten grain doses, until free discharges of a thick consistence, and of a green or black colour, were brought off, rarely failed to subdue this form of the disease. Sometimes the liver would speedily take on this mode of action; but at others, its secretions would pass through many changes before they reached the green consistent stool, which was ordinarily, the prelude to a healthy condition of this organ. Their transitions were very various; but the *lead* coloured stool generally semi-fluid, but sometimes firmer, and what I called the *charcoal stool*, rather thin, and having granules adhering to the surface of the vessel, resembling pulverized charcoal, were the most common. Any change from *white* to *green*, and from a condition of perfect *fluidity* to *consistence*, was favorable, and only required perseverance in the proper remedy to complete the cure. Sometimes, a single pill of calomel and opium was sufficient; but most frequently from sixty to one hundred grains of the former, and from two to six of the latter, were required. This, with such modifications as each physician preferred, has been the general practice here; and I have given into it; but a greater experience has convinced me, that a much less quantity of opium should be used; indeed, I am not sure that *any* is absolutely necessary, unless the spasms or cramps are present. Certain I am, that the congestion of the brain, so apt to occur after reaction takes place, is greatly aggravated by the opium.

If nausea or vomiting existed in the early stages, I gave an emetic of a saturated solution of common salt. Some used the mustard emetic, but I preferred the salt and water, unless the patient was greatly prostrated. The eupatorium was also given by many as an emetic; but either of the others are better in my opinion. I did not give the ipecacuanha at all. In one case I administered the antimonial wine, but I was not pleased with it, although the patient recovered. The advantages of an emetic, when nausea or vomiting existed, were very striking, (particularly of the salt emetic, concerning which my experience was considerable;) it threw off the contents of the stomach, and restored it to a quiet condition, in which it would for an hour or two, bear any medicine which the farther treatment of the disease rendered expedient. This was the golden period for the administration of calomel, or if preferred, calomel and opium. Sometimes I

have given half a dram or even a dram at a dose, and have been greatly pleased at the result. Indeed, I incline more and more to the opinion, that all you deem neccessary in the case should be given at *a single dose.* Some added to the calomel and opium a grain or two of capsicum, and a few grains of camphor; but I do not admire either addition, unless under circumstances, that would, in other diseases call for these remedies. I expected nothing more from the emetic, than what I have stated. I did not look to it as a means of rousing arterial action, and preparing the system for the use of the lancet; I confess I observed no such effects. On the subject of bleeding generally, my rule of practice was extremely simple; I was governed by the same indications which apply to this remedy, in other diseases. When the pulse is strong, no matter what its velocity, infinite benefit is derived from the lancet: when indistinct, feeble, and vacillating, it hurries on the fatal issue. I was always delighted, when I found a pulse that would justify the use of this instrument. But I bled to *reduce*, not to *increase* arterial action. For the removal of the *numbness*, free purgation with calomel was indispensable; without this, frictions did no good. In this condition I bled more freely than in any other, except when cramps were accompanied with *strong pulse* —a case of great apparent danger, but one which yields readily and beautifully to the lancet and calomel.

Vomiting, though a prominent, was generally the most easily subdued of all the symptoms of cholera. An emetic—a large dose of calomel, with or without opium—a sinapism to the epigastric region, or to the spine—quietude—withholding all manner of drinks, rarely failed."

Dr. Henry's experience has not inspired him with confidence in the efficacy of internal stimulants in the stage of collapse. On the contrary, he thinks them prejudicial. But he has nothing to offer as a substitute for them, and expressly says, you may do much to *avert* this state but nothing to *cure* it. We are strongly inclined to the same opinion. Patients undoubtly recover now and then, from this condition, and so they do from asphyxia, by drowning in water or carbonic acid gas, but these resuscitations are rather to be ascribed to nature than art. Those who survive the state of true collapse, do it, in all probability, from the inherent energy of the vital power, and would have lived, we suppose, if nothing had been done.

In conclusion, we may remark, that the pamphlet before us, though hastily and loosely written, is the production of a sensible and energetic practitioner, who saw much of the disease, and

in his efforts to combat it, selected such means from our copious materia medica, as a man of talents and decision, would soon come to prefer to all others, which have yet been proposed.

Dr. Christopher Yates, of the city of New-York, in the 2d Edition of "Observations on the Epidemic," (August, 1832) finds two indications requiring to be fulfilled in its treatment:

"First. Remove as speedily as possible, the offensive matter from the stomach and intestines in the manner that nature indicates by her perhaps too feeble efforts, VOMITING and PURGING.

Secondly. Allay the spasmodic affection by anodynes."

This morbid secretion, in the opinion of Dr. Y. is the immediate cause of the vomiting and purging. Upon it he directs his measures, instead of looking to the irritation of the mucous membrane, by which the infiltration of an acid fluid into the bowels is occasioned. Let us hasten to his therapeutics.

"My remedy then is, to vomit or purge off the offending matter, be it what it may; and if pains or spasms continue to exercise the system *after* a free evacuation, especially by the bowels, give ten drops of laudanum every ten minutes until they cease; or at once give a full dose, of ether a teaspoonful, and laudanum fifty drops, mixed together in some liquid agreeable to the taste.

If the vomiting in this disease should be too incessant, and reject a full dose of an emetic, of which I prefer the tartrite of antimony (tartar emetic) before all others, I would, as I have been obliged in cases of yellow fever, dissolve twenty-four grains in eight ounces of water, and give a table spoonful *instantly* after each ejection from the stomach; in such case, eight or ten spoonsful have been taken, a small portion will have touched the coat of the stomach, when longer intermissions will soon follow, and eventually a complete emetic effect be produced. When once the first passages have been cleared, all danger from the disease is over; mucilaginous drinks, and occasional gentle laxatives finish the cure. This treatment is applicable to malignant cholera, and I shall rely on it for the treatment of the prevailing disease, which wants but one symptom to constitute it the Asiatic dis

ease, and that is *cholera.* All the cases that I have seen in the hospital, which I have considered as ordinary disease, have in their commencement ejected bile. These will recover if they are not frightened into a worse stage, from their situation, or medicated into the disease. I would by no means have it understood that I would administer emetics in the forming state or first stages of the disease, unless accompanied with symptoms of nausea or vomiting. For premonitory symptoms I would and have now successfully used, a powder consisting of two parts of tartrite of potash (soluble tartar) and one of jalap—dose twenty grains every two hours till it operates freely; or, if more convenient, castor oil."

In a subsequent part of his pamphlet, our author remarks:

"There should in no instance be given any thing but mild cathartic medicines where there is neither nausea nor vomiting, nor a preternatural diminution of heat on the skin. In cases where the natural heat of the skin is either increased or diminished from its usual standard, accompanied with nausea or vomiting, I would have immediate recourse to an emetico-cathartic, composed of four grains of tartar-emetic and six grains of calomel.

Where spasms occur, I consider them merely symptomatic of the irritating effect of the secretion in the first passage of the intestines, and instead of soothing, paliating medicines, I would, by the first and most active means in my power, *remove* the morbid matter: and in case the symptomatic affections cease not with its expulsion, it is then in time to resort to palliative or antispasmodic remedies."

Dr. Yates asserts, that his practice has been eminently successful, and, in reference to the early and forming stages of the disease, we are prepared to credit his declaration. In the more advanced states it may, for aught we know, be as good as any other.

In the "Cholera Gazette," of Philadelphia, we find a notice of the various methods of treating the Epidemic in the Polish army. We shall transcribe but one of them.

"By Dr. Sturm, of the camp near Kamienka, warm water appears to have been the remedy chiefly employed. He gave the patients

every fifteen or thirty minutes a glass of water as warm as it could be swallowed—he declares that after fourteen glasses at the furthest, had been taken, the disease was so far removed that the patient complained of a slight diarrhœa. The good effects of the warm water were, we are told, so promptly shown, that in two hours or even sooner, a cure was often effected, particularly when it was drank with sufficient freedom."

We see no objection to the idea that this simple practice may often be effective.

In speaking of Dr. Spencer's work, we took occasion to refer to the practice of Dr. Stevens. Among the treatises on Cholera which have reached us, is one by that gentleman, written expressly to recommend what is called the saline treatment. This method is based upon the acknowledged loss of the serum of the blood, with its saline ingredients. These, Dr. Stephens proposes to replace by throwing them into the stomach. Were they and the water in which they are dissolved, absorbed from the stomach, the practice would perhaps be beneficial; but where is the evidence of such absorption? We fear it does not take place. A surface which pours out so copiously as does that of the stomach and intestines, in most cases of Cholera, is not likely to absorb much of any kind of fluid. Moreover, as most of the saline solutions increase the serous discharges from the stomach and bowels, when given in other forms of disease, is it not possible, that they may do the same in Cholera, and thus prove injurious? This does not seem to us an extravagant supposition. It may be remarked still further, that Dr. S. proposes merely to supply a loss. He does not strike at the morbid condition of the solids, which drains the blood-vessels of their serum. But let our author, who is a man of intelligence, experience, and zeal, speak for himself as to the clinical effects of his practice.

"In the beginning of April, 1832, I received a visit from Mr. Pout, a medical gentleman in Albany street, who called to inform me that the Cholera had broken out in the prison of Cold-Bath Fields, and that he had been requested by Mr. Wakefield, the surgeon who had charge of the prison, to say that he would be glad to show me the cases; and from what he had heard of the saline treatment, he should be very willing to give it a trial—the more so, as he had now no longer any faith in the common remedies.

On the receipt of this message, I immediately went to the prison; and after some conversation with Mr. Wakefield on the subject, he not only agreed to adopt the saline treatment, but invited me to attend the cases along with him. He consented also that Mr. Crooke, a young medical gentleman who had lived with me for several years in the West Indies, should be allowed to remain constantly in the prison, to see that the medicines were faithfully administered, as well as to take notes of the cases.

The following is an outline of the practice which was pursued, not only in the prison, but every where else where I have had an opportunity of treating the disease.

First. The treatment was generally commenced with a Seidlitz powder, which was given with a view of lessening the gastric irritation, and partly for the purpose of removing the diseased secretions from the intestinal canal.

Secondly. When the stomach was irritable, (which it generally was,) a large sinapism was immediately applied to the epigastric region, and when the patients were cramped in the extremities, frictions were used with hot flannel. The pain produced by the spasms in the muscles was not only relieved by the frictions, but by this and the application of sinapisms to various parts of the body, the quantity of animal heat was increased, and this I need scarcely say, is an object of great importance in the treatment of Cholera.

Thirdly. A powder containing

Carbonate of soda, ʒss.
Muriate of soda, ϑj.
Chlorate of potass, grs. vij.

was dissolved in half a tumbler of water, and given soon after the seidlitz. In severe cases, the above powder was administered every half hour. In those that were less severe, it was used every hour, and in some malignant cases it was given every fifteen minutes. In short, it was given more or less frequently according to the circumstances of the case, and continued until the circulation was fairly restored; it was then given at longer intervals, and when the reaction was completely established, it was left off by degrees.

Fourthly. When the stomach was irritable, the use of the above powder was occasionally suspended, and common effervescing mixtures, or small doses of the common soda powders, with an excess of the carbonates were frequently used, until the irritation was lessened, and then the carbonate of soda, with larger doses of the chlorate of potass were generally given without the addition of the muriate of soda, and

frequently in such cases the chlorate of potass was given by itself, in doses containing ten grains each.

Fifthly. A solution of muriate of soda was also thrown up into the intestines, at as high a temperature as the patients could well bear this saline fluid.

Sixthly. In two very severe cases which occurred out of the prison, the patients were put into a hot saline bath with evident advantage. It is well known, that a hot saline fluid is a better conductor of heat than fresh water at the same temperature; but, independent of this, a part of the saline ingredients may be absorbed from the skin, and the patients may also be benefitted by respiring the hot saline vapor. It is but fair to state, however, that this means, which was evidently beneficial in the cases in which it was tried, was proposed by Mr. Marsden, one of the surgeons to the Free Hospital in Greville-street.

Seventhly. Soltzer water was allowed *ad libitum*, when the patients expressed a desire for something to drink. A strong infusion of green tea was also occasionally used, in severe cases, apparently with advantage.

Eighthly. It was considered essentially necessary to keep a large fire, both night and day in every room where there was a patient with Cholera. It is now well known, that in by far the majority of cases, the collapse commences betwixt two o'clock in the morning and six A. M., or in other words, at the period of the twenty-four hours when the atmosphere is coldest: from which it appears that external cold acts as an exciting cause to the state of asphyxia. But independent of this, we have seen that the degree of force, with which oxygen can remove carbonic acid, through the medium of a membrane, depends, in a great degree, on the temperature of the two fluids. Now, when the temperature of the blood is so very low, as it is during the state of collapse, and if the air which the patients then breathe be also cold, the small quantity of carbonic acid which exist in the black venous blood, will not be attracted by the cold air, and consequently this of itself may be one cause of the sudden death.

Ninthly. It is necessary to be very careful not to dismiss the patients as cured until they have been, at least, several days completely out of danger. Two of the cases which proved fatal in the prison, at Cold-Bath Fields, were lost, from our not having been at that time sufficiently aware of the importance of this.

Tenthly. The patients ought not to be allowed to use one particle of solid or indigestible food, for at least five days after they have recovered from the state of collapse. We nearly lost more cases than one, from the too early use of solid indigestible food; and one woman, a nurse in the London Free Hospital in Greville street, actually died from this cause, after having been considered as completely out of danger from a most violent attack of Cholera accompanied with collapse.

Eleventhly. Those who put their patients under the saline treatment, ought to trust almost entirely to this; for if they use calomel, brandy, or other destructive agents at the same time, they will do little good; but above all, not one particle of opium ought to be given

internally; for, from what I have seen, I consider this to be as fatal in Cholera, as it is in the last stage of either the African typhus or the seasoning fever of the West Indies. Where the stomach, however, is extremely irritable, about twenty-five or thirty drops of laudanum, diffused in a little tepid water, may be injected with a small syringe, into the rectum, not only with impunity but considerable advantage.

When the stomach is very irritable, small quantities of milk with carbonate of soda may be given occasionally; and when we use the saline powders in such cases, they ought to be dissolved in a very small portion of water.

When the case is exceedingly malignant, or where we are called in late in the disease, and find the patient already in collapse, we ought then to have recourse to the most active measures. An ounce of the muriate of soda, with half a drachm of the muriate or the chlorate of potass, should be given immediately in cold water and repeated, if necessary, every half hour, until the patient has taken about three doses of this strong solution. Should reaction be brought on by this, it may then be kept up by the common saline powders; but should this experiment fail, we may then, as a last resource, give the patient another chance for his life, by injecting a saline fluid into the veins.

The ejections, and every other source of impurity, ought to be immediately removed from the room where the patients are; and the infected wards should be fumigated at least twice a day with gunpowder, and every particle of suspicious clothing, bedding, &c., should be boiled, for at least half an hour, in a strong solution of common soda. Those who are recovering from the disease are liable to a relapse, and such cases are generally fatal; but from what I have seen, my belief is, that those who have completely recovered after having had the Cholera once, have an immunity from any future attack of this disease.

The above is an outline of the treatment and means which were used: the following is, I believe, a fair statement of the outline of the result:—

The three first cases which occurred in the prison were treated by Mr. Wakefield in the common way—with opium, brandy, the hot-air bath, &c.; but they all died after a very short illness. Almost immediately after this, another case was treated in a similar way by another practitioner, who had been sent for to the prison during the night, in consequence of Mr. Wakefield being unwell at the time. This gentleman was not then aware that any new practice had been adopted in the prison. He treated the patient *secundum artem*, with brandy, opium, and chalk; but the result was, that this patient was past all hopes of recovery before either Mr. Wakefield or myself saw him in the morning;—consequently the four cases that were treated in the prison in that way, there were four deaths and not one recovery under the common practice.

It may be proper to state, that previous to the beginning of April there were no bowel complaints in the prison, and the whole of the prisoners were then as healthy as they generally are at that season of the year. The first case that was reported to the Board of Health

occurred on the 5th of April;—the saline treatment was commenced on the 8th. There were in all at that period about one thousand three hundred souls in the prison; and from the 8th of April to the cessation of the first epidemic, there were at least one hundred individuals who were evidently more or less, under the influence of the poison.

In about fifty of the above cases, the patients were attacked with a bowel complaint, and most of them had, more or less, irritation at the stomach. The fluids that were ejected, were generally deficient in bile, and the bowel complaint was attended with the following peculiarities:—

First. The inclination to go to the night-chair came on more suddenly than it generally does in cases of common diarrhœa.

Secondly. The ejections were less bilious than in common diarrhœa; and opium, chalk, astringents, &c., which are generally useful in cases of common bowel complaints, were of no use in checking the diarrhœa, which occurs when the patients are under the influence of Cholera poison. These remedies were chiefly used in cases which occurred out of the prison; but they evidently had no effect in checking the specific ejections which are produced by the Cholera poison; and this I presume was the cause of the diarrhœa which occurred in the fifty cases in the prison to which I refer. The whole of these were immediately put under the saline treatment, and this appeared to give an immediate check to the disease; and I believe it was owing to the saline remedies, as well as to the circumstance of their being constantly kept in a warm room, and well taken care of, that not one of these cases ended in collapse: consequently, though they were constantly breathing in an atmosphere completely impregnated with the poison, yet no one of them was lost.

There were also about thirty-one similar cases, in which the above symptoms were still more distinctly marked, and in many of them the bowel complaint was more or less accompanied with cramps. These were all treated in the same way with the non-purgative salts, and in three, four, or five days, every one of them were sent from the observation ward, as we believed at the time, completely out of danger. I am sorry, however, to be obliged to add, that two of these cases which had been unfortunately dismissed too soon, and sent back as cured to the cold wards of the prison, were attacked with collapse during the night, and before they could again be put under the saline treatment, their stomachs were so irritable that they could scarcely retain even a tea-spoonful of water; and both these cases proved fatal in a very short period from the commencement of the collapse.

In addition to the eighty-one individuals already referred to, we had about nineteen cases in the prison, where the patients were either attacked with the disease, and got into a state of asphyxia in the cold wards of the prison during the night, or where the stomach was so irritable in the first stage that it could not retain the stronger salts. In almost every one of those cases the disease assumed a most malignant character. These were all treated with the energetic non-purgative saline remedies; and in the nineteen malignant cases to

which I now refer, we had eighteen recoveries and only one death: consequently, the total number of patients, who were all evidently under the influence of the Cholera poison, was about one hundred, yet in those cases where we trusted almost entirely to the saline practice, we had only three deaths, and ninety-seven recoveries.

* * * * * *

The saline treatment has now been used, in that part of London, in about two hundred and twenty-six cases of Cholera. Out of this number there have been about twenty deaths, and upwards of two hundred recoveries. It is true, however, that many of these were not cases of collapse; for this, where we saw them early, was generally prevented by the immediate use of the saline treatment; but from what I have seen, my conviction is that, if these cases had been treated with the common remedies, the one-half of them would have been lost. Or, when we compare the result, even in the most malignant cases, with the average mortality not only in London, but in other places, it will be found that the balance is greatly in favor of the saline treatment."

Let us recur to the supposed *modus operandi* of this practice, Dr. S. has, as he informs us, made experiments which have satisfied him, that the red color and stimulating qualities of the blood, depend, either directly or indirectly, on its saline ingredients. When these are wanting, the oxygenation and decarbonization of that fluid cannot go on. By supplying them the great function of œration is restored. The altered condition of the blood, in cholera, yellow fever, and other malignant diseases, he regards as primary, the affection of the solids as secondary. The ærial poisons which engender these maladies, he supposes to be absorbed through the lungs, when they deteriorate the constitution of the blood, and promote the excretion of the serum with its saline ingredients, or effect their decomposition and develope muriatic acid in the circulation, which is often, he affirms, discharged upon the mucous membrane of the stomach and bowels, in the diseases to which we have referred.

Dr. Stevens' labors seem not to have found favor with the Medico-Chirurgical Review; nor does his practice appear to have been generally adopted in the United States. Our own trials have been too limited, and too much mixed up with other measures, to enable us to speak with the least authority. We hope our readers will think the method worthy of being submitted to the test of a candid experience.

The 22d and 23d Nos. of the American Journal of the Medical and Physical Sciences, contain two long and elaborate papers on the Epidemic, by Dr. Jackson of the University of Pennsylvania. They are characterized by the minuteness of observation, acuteness of thought, and copiousness of technical language, which distinguish that able and eminent man.—Without attempting to follow him through his course of elaborate pathological speculation, we shall endeavor, in pursuance of the plan of this review, to present his *methodus medendi.*

He divides the disease into five stages.—1, Slight cholerine or diarrhœa; 2, confirmed irritation, attended with vomiting, purging and cramps; 3, incipient concentration, or early collapse; 4, confirmed collapse; 5, reaction or consecutive fever.

We shall transcribe his summaries of the treatment, which he conceives to be the best adapted to these different stages. The extract which follows, relates to the two first stages.

"The *indications of cure* founded on the foregoing principles, are the following:—

1st. To adapt the aliment as to quality and quantity to the state of the digestive forces; or to suspend entirely, or greatly to diminish the exercise of the digestive functions.

2d. To allay the sanguine and nervous irritation existing in the whole alimentary canal.

3d. To bring on diffusive excitement, or the irradiation of the organic circulation, counteracting and preventing its concentration towards the alimentary mucous tissue.

4th. To accomplish a more healthy state of action, of the secretions, and regular functional performance of the bowels.

The practical, remedial and therapeutic means, for the accomplishing of the preceding indications, are various and diversified. They are to be employed and adapted according to the particular case characterized by its distinguishing symptoms.

For the attainment of the first indication, the diet of the patient should be made to consist, in the first period of the disease, of boiled black tea, with cream, and stale wheat bread, or soda biscuits, for breakfast and supper; while rice, grits, or homminy, should constitute chiefly the dinner. Weak chicken or mutton broth, or water, is frequently most soothing and grateful to the stomach. Toast and water, barley or rice water, form the most appropriate drink. In the second period, or confirmed irritation, the diet must be absolute, or consist solely of chicken water, rice or barley ptisan.

The second and third indications are accomplished by nearly simi-

lar means; for the attainment of the one almost necessarily induces the other. These means are, 1st, immersing the feet in a warm stimulant foot-bath for fifteen or twenty minutes: the bath may be sinapised or made of a weak alkaline ley or solution of salt. The patient is then to be placed in a bed well covered, with warm applications to the feet, as bottles of warm water, warm bricks, irons, or bags of heated oats, &c. If there be much uneasiness in the abdomen, warm epithems are to be applied, and renewed as they become cool. Hops steeped in warm water or vinegar and water, and subsequently expressed nearly dry, I found very convenient for this purpose, Dry heat is to be preferred in some instances, and then a stomach warmer, or heated oats, hops, or salt contained in bags, may be resorted to for this object. In the lighter forms of the first period, or the preliminary and premonitory stages of the disease, advancing into the confirmed affection, the above treatment very generally suffices to dispel the symptoms, and arrest its progress in the course of one or two days. The observance of a proper regimen is all that is, then, requisite to protect against a relapse. This I found was the greatest difficulty in the management of patients. The restoration to a state of comfortable feeling was considered as a license for indulgence, but as the specific predisposing cause is in constant operation during the epidemic period, the necessity for attention to the prophylactic or preventive regimen still continues. It is even more imperative, as the attack already suffered, leaves the alimentary surface more irritable, more sensitive to impressions, and of consequence, more disposed to pertubating actions from light exciting causes.

2d. The administration of diffusive excitants in small doses, in order to ensure their introduction into the economy, and the general or diffused excitement through the organism. One of the most frequently employed of these, was the alcoholic solution of camphor. The partizans of Hahnemann and our homœopathic doctrine, extol camphor as a specific; but, from my own experience of its operation, I am satisfied that its action is diffused excitement. Taken in small doses, I have found a sentiment of warmth and glow to be developed on the surface, succeeded by a gentle, warm transpiration. This is the precise reverse action of that to which a constant tendency exists in the first and second periods of the disease, and which is counteracted by the action of camphor. The Hahnemannists condemn its association with opium in any shape. My own observation does not confirm the correctness of this interdict. On the contrary, I found great advantage from the combination; and the cases in which the camphor proved most useful, were the light forms of the first period, with nervous pains of the abdomen. The dose in which it is administered, is from two to five drops, mixed with cold, sweetened water, and given every fifteen minutes, half hour or hour, according to the urgency of the symptoms. The premonitory symptoms were, in immense numbers of cases controlled by this remedy, and in the incipient stages, I have seen the most decided effects when the symptoms were principally of a nervous character. Other mild diffusible stimuli

were however of equal utility, which is an evidence that in camphor there is nothing of a specific mode of action. Aqua ammoniæ in the dose of two drops, combined with five or ten drops of tinct. opii, and given in sweetened water, answered quite as well. The following prescription I frequently used, and found it to succeed equally with the camphor in the same class of cases:—

℞. Tinct. lavend. comp. tinct. camphoræ, āā. ℥iv.; liq. Hoff. anod., tinct. thebaic, āā. ℥u. M. ft. mit.

From ten to twenty drops of the above were administered at appropriate intervals.

In the cases in which the nervous symptoms were less decided, I generally directed the following prescription.

℞. Massæ hydrargyri, gr. viii.; ext. opii. aq. pulv. ipecac., āā. gr. ii. M. Divid. in pill. iv.

One of these pills was given every two, four, or six hours, according to the symptoms.

When the inflammatory symptoms were not very acute, the symptoms frequently became mitigated by the preceding remedies. But whenever the vomiting and purging continued, accompanied with severe pain in the abdomen, then I had recourse to sanguine depletion, either general or local; or both, according to circumstances. General depletion was practised in the limited number of cases, in which the pulse was full and excited; but in the others, leeches or cups to the abdomen were found the more effectual and safer proceeding. It is surprising to witness how prompt often is the alleviation and abatement of the symptoms, following the application of from thirty to sixty leeches to the epigastrium and the illiac regions. In no instance did I find it necessary in the patients I treated in the first stages, to repeat the local depletion. One application was sufficient to procure a favorable result. In several instances general depletion made but little impression, while a very prompt relief ensued upon local depletion.

General blood-letting is but partially applicable to the cases of cholera. It should be restricted to those only where the constitution is vigorous, and the patient has not been enfeebled by age, previous diseases, or dissipated living; and where the forces of the general circulation do not exhibit a manifest tendency to failure. In those cases in which it proves an available and salutary remedy, its operation is the reduction of the internal irritations, and the inviting to a revulsive movement, co-operating in this mode with, and facilitating the diffusive or centrifugal action of the means put into operation for this object. This importaat movement, the *great recuperative action* of the organism in the *natural cure* of diseases, is based upon the vital forces of each organ, the susceptibility and capacity of each organ to assume and maintain vital reaction. Now, this state depends on the activity of the organic circulation in each organ, and its supplies of the vital sanguine fluid, the great energizer of vital reaction.

If, therefore, this be abstracted below the sum necessary to maintain the vital reaction of each organ in the degree essential to its functions, a state of asthenia, sedation, or exhaustion, is the necessary consequence, and diffusion of irritation, irradiation, reaction, and a centrifugal movement, tending to the equalization of the organic and general circulations and the forces of life, become nearly or quite impossible. Whenever the signs of concentration are rapidly approaching, or the state of collapse, so named, is imminent, general depletion is then a most equivocal, nay, a hazardous remedy. Should it fail to remove or greatly to lessen the centrifugal force of the internal irritation, and produce a revulsive operation, its effects must be most disastrous. Its direct action being the abstraction of blood from the general circulation, the force of this, the energy of the heart's contractions, the supplies of sanguine vital fluid sent into the organs for the sustentation of their vital reaction, all are diminished, and of necessity the whole organism is prostrated. The sedation resulting from general depletion, cannot, from its mode of action, be directed so as to influence those organs exclusively whose vital reaction is in excess. All are influenced alike, and the revulsion or diffusive excitation, which is merely favoured by general depletion, is dependent on other causes, which we neither can absolutely command, nor whose presence even can we know by any positive signs. To resort to this remedy, therefore, when the failure of the forces of the general circulation evidences the exhaustion already induced in the sum of the sanguine vital fluid by the concentrative energies of the internal irritations, is to throw ourselves on the chapter of accidents, with this serious disadvantage, that the loss of our hazard is irretrievable ruin, must almost inevitably prove fatal.

Local or organic depletion offers none of the objections or difficulties attendant on general depletion. Its mode of action is totally distinct, and it is applicable to numerous cases where general depletion is entirely inadmissible. In local depletion the blood is not abstracted from the general circulation directly, and its influence is not that of a direct debilitating remedy immediately producing an exhausting, debilitating action on the whole organism. Its operation is restricted to the organic, or as it is termed sometimes, capillary circulation, and is attended with a local irritation or excitation, resulting from the means by which it is accomplished. The common universal result of local irritation or excitation is thus produced—an afflux towards the part irritated or excited—but the escape of the blood, preventing the formation of a congestion, which arrests this movement when a simple rubefacient is employed, and limits its influence, renders it continuous when caused by local depletion, extends it into a wide, expansive area, and often causes a decided and marked affluxive movement through the whole organic circulation. By the establishment of this movement, a direction is given to the organic circulation towards the point where the local depletion is made and the blood is escaping; towards this point does the sanguine fluid tend, and diminishes consequently in those the most opposite, and hence arises the peculiar and admira-

ble effects to be obtained by the employment of these means—effects more frequently applicable in the treatment of diseases, and of more decided and beneficial agency than most other therapeutic remedies at our command. It is a remarkable fact, that the debilitating or sedative action of local or organic depletion is at the points the antipodes of that where the depletion is made. The application of the means used for this purpose is not a matter of indifference. The position selected for the application in most instances, there are exceptions under certain circumstances, should be directly opposed to that intended to be influenced. Were this the place, and the digression would not be too long, I could cite numerous facts in support of the axiom. A very little experience with these means is sufficient to give the demonstration even to casual observers of its accuracy. Local depletion from the thorax, it is known to all, will not give relief in the inflammations of the abdominal viscera, nor when made from the abdomen, prove beneficial in the inflammation of the thoracic organs. Did local or organic depletion accomplish its effects merely by the abstraction of blood, it would be indifferent whence the blood was taken, so that the amount was the same; but the contrary is too well known to be contested.

In what manner local depletion causes this affluxive movement in the organic circulation, and expends its influence on tissues different and remote from that whence it is made, can no more be explained than can the same operations be explained as resulting, though in a lesser degree, from the action of rubefacients, vesicatories, cauteries, and other revellent measures. These operations depend on the forces and laws of the organic, vital and molecular circulation or movement of the sanguine fluid in the tissues. The mechanical or general circulation—the movement of the sanguine fluid in masses or columns to and from the respiratory surfaces, and to and from the nutritive surfaces or organic tissues—accomplished by physical forces and on physical laws, has been well investigated, and is almost, though not completely, elucidated. But as respects the organic textular circulation, our information is very limited. We know nothing of the forces producing and maintaining, and but partially the laws that govern it. It is dependent on the same forces, and governed by the same laws, that are the causes and regulators of vital reaction, or the phenomena of vitality. As the mode of action of these forces is unknown, inscrutable, it is not possible to assign the mode in which this great vital phenomenon, so deeply concerned in the pathological condition, and of so great a moment in therapeutic operations, is accomplished. We must therefore be contented with the facts revealed to us by observation, and attempt the establishment of those general principles or laws—the coordination of the facts in the order of their dependence, which are obtained by a well-regulated experience.

In addition to the foregoing means, I prescribed, when the stomach was much distressed with nausea and vomiting, the effervescing draught of Riverius, to which was added the black drop. Frequently

I made the solution of the bi-carbon. potassæ in the aqua camphoratæ, according to the following prescription:—

℞. Bi-carbon. potossæ, ℥iv.; acetat. opii, gtt. xv.; aquæ camphoratæ, ℥iv. M. ft. solut.

Half an ounce, mixed with an equal quantity of lemon juice, was given in the act of effervescing. The dose was repeated every hour or half hour. This draught was often very grateful.

To allay the thirst, and at the same time to abate the gastric irritation, iced water in small quantities, or iced gum water, very slightly acidulated with lemon juice, and sweetened, was allowed for drink. The iced carbonated or Seltzer water was also a general beverage, and highly grateful to the stomach. In many instances ice itself was given in very small pieces. One of the patients I attended early in the epidemic attacked with the disease, was so delighted with the relief he experienced from iced drinks and from ice, that when I subsequently saw him, he would cry out "give them ice."

By allaying the intense sensation of thirst, which often amounts to agony, one of the sources of nervous disturbance and irritation is cut off. Cold also acts as a direct sedative on the gastric mucous membrane, and the decided relief obtained by its employment, while it establishes the propriety of the treatment, proves clearly the highly irritated state of that organ, and the kind of agency resulting from cold drinks. The diminution of the irritation of the gastro-intestinal surfaces, by weakening the centripetal action, is the most efficient step towards establishing a diffusive movement, in promoting irradiation or reaction, and rendering more efficacious the operation of the external revellents, the cutaneous reaction caused by sinapisms, frictions, heat, leeches and cupping, or the force producing a centrifugal movement.

4. The last indication in the treatment of the first and second periods, or of cholerine, in the cases in which it arises, and in my practice they were very few, is attained by the administration of mild laxatives or ec oproctic remedies. The treatment already indicated in the cases under my charge, was generally adequate to the entire protection of the individual from the invasion of confirmed cholera, and to the perfect restoration to a healthy condition of the alimentary canal. In two of fifty-five patients, a costive disposition ensued, which continued for several weeks; but finally disappeared by the combined employment of appropriate regimen and laxatives. In one, an alkaline infusion of rhubarb was employed; in the other Saratoga water. In two, more uncomfortable feelings, and occasional tormina, continued to recur at intervals. This was removed in one by fifteen grains of rhubarb; in the other by small doses of calomel and opium, with castor oil in the dose of one drachm. These were the only cases in which I found it necessary to prescribe in order to bring the bowels into a natural condition after the cholerine symptoms had been removed. They were the only instances also in which I employed any purgative or evacuant medicines."

His principal remedies for the first stages of collapse, were the effervescing draught, camphorated water, mucilages, ice, laudanum, half grain doses of calomel, astringent injections, and sinapisms. His treatment of the state of confirmed collapse, we shall give in his own words:

"*Treatment.*—Adopting the above pathological views of the proximate causes of the fourth period, or state of collapse, the indications of treatment become well defined. They are, 1st, to arrest the inordinate evacuations emptying the vessels, enfeebling the heart, and exhausting the circulation through the stomach, bowels, and skin. 2d. To restore the wasted fluids by giving to the patients constantly drinks of various kinds, and administering aqueous enema intended to remain in the bowels. 3d. To continue the treatment calculated for the first periods of the disease, which is to allay the extensive irritation of the alimentary mucous membrane. 4th. To quiet the irritation of the nervous system causing spasms and cramps: and 5th. To produce as early as possible diffusion or re-action.

The first of these indications is fulfilled in different manners. The safest in the cases of the temperate and robust, is the direct antiphlogistic treatment. This consists in allaying the vomiting by the effervescing draught; iced carbonated water; small pieces of ice constantly held in the mouth: leeches or cups to the epigastrium and abdomen. General depletion, when collapse is threatened is highly dangerous. It is admissible only in the first periods and in robust individuals, especially of the sanguine temperament. When the circulation is already enfeebled and failing, the abstraction of blood from the emptied vessels is a measure calculated to insure exhaustion, the proximate cause of the collapse. Subsequent to the employment of these, or at the same time, lime water and milk may be administered every hour. When spasms exist, opiates in small doses, and camphorated water are demanded, and are often useful. Calomel in the dose of gr. ss. to gr. i. with acetat. plumbi, gr. i. given every hour or half hour will succeed in some instances.

The same end is attained by an opposite method, and is best adapted to those who are threatened with rapid exhaustion. It is not as safe in the more robust individuals, and must not be persisted in for too long a period. This method consists in direct or immediate revulsion, converting the secretory irritation of the alimentary mucous membrane into a higher grade of action or inflammatory irritation, and thus arresting the evacuations. In this manner do the mustard and brine emetics operate, as also ipecacuanha, and some of the stimulant and irritating cathartics employed. Calomel in large doses, by changing the mode of irritation, will accomplish often the same end. When the evacuations have been controlled by the remedies of this character, a new danger ensues. The patient has to encounter the hazards of a gastritis and enteritis, with a febrile re-action having those local affections for its basis, and attended often with secondary sympathetic deter-

minations to other organs of great intensity. The excitant, direct revulsive treatment must be immediately abandoned when the signs of these appear, and the antiphlogistic substituted in an appropriate manner.

The cutaneous transpiration proves exceedingly exhausting to the patient, and is of itself sufficient often to bring on collapse. It should never be excited by surrounding the patient in blankets, or enveloping him in warm vapor. Prior to our own experience of the disease in this city, and relying on European statements, the sanitary committee, acting on the advice of the Consulting Medical Board, made most ample provision of various heating apparatus, steam baths, stomach warmers, or other similar means. All the bedsteads of the hospitals were adapted for the use of steam, and in the management of the first cases these means were assiduously employed. No patient under this treatment survived over from four to six hours, although some had strength sufficient to walk into the hospital. Heat was most distressing to the patients, who resisted its application, and protested often vehemently against its employment. It must be confessed, that the prejudices and excitement of the public against the hospitals in the commencement of the epidemic were not without foundation. This method was soon abandoned. The patient succumbs the more rapidly in proportion to the profuseness of the transpiration. It is best checked by cool air, frictions made with cloths dipped in iced water, or with ice itself, followed up immediately with dry frictions. Frictions with actively irritating liniments, with dry chalk, and similar measures, were found often effectual in arresting the cutaneous discharge. The evacuations from the bowels are best restrained by small doses of opiates, or the same given in enema, either of simple water, mucillage, or saline solution. In some cases astringents are useful. I prefer of this class the rhatania.

The second indication is obtained by administering freely of drinks and liquids to the patient. While the stomach is very irritable, and the thirst intense, ice, iced water, iced Seltzer water, or carbonated water are the most grateful to the patient, and the most frequently successful means. In persons who have been addicted to the excessive use of ardent spirits, some stimulus is often required, as small portions of brandy, wine, or carbon. ammoniæ, aq. ammonia, or others of this class. The weak animal broths, as chicken, mutton, or veal water, were found very useful. Gum, rice, and barley water were advantageous, as allaying irritation, affording light nutriment, and replenishing the circulation.

The third indication is fulfilled by the same means recommended for the first and second. They allay irritation, and it is by that operation they arrest the vomiting and the profuse, exhausting secretions and evacuations. When the direct revulsive treatment was followed with a view to suppress the evacuations, as soon as that object is accomplished, the remedies must be cautiously employed, or entirely withdrawn; as then, they oppose the obtaining of this indication. Small doses of opium and calomel, or opium, calomel and ipecacuanha are adapted to this end—together with opiate enema.

The last indication can never be obtained until the evacuations

have either entirely ceased, or are very considerably diminished. At least, such is the result of my observations. While they continue, and the circulation, general and organic, is reduced to a low ebb, and the vital forces in all the organs nearly extinct, diffusion or irradiation of excitement cannot be accomplished. For this purpose, mobility of the organic fluids, (the fluids of the capillaries,) is indispensable.

The most effectual means are cutaneous revellents, and the safest direction to give the excitement is to the skin. Frictions, dry, or made with irritating liniment, sinapisms and blisters to the obdomen and extremities, by exciting the cutaneous tissues, are the most efficient means of rousing the dormant forces, and of inviting the excitement from the internal surfaces to the exterior. The diffusible stimulants may be brought into action with this intention in many cases. The best, most certain, and safest mode of employing them, is in minute doses frequently reiterated. In this manner their absorption and diffused action is procured, while their local excitation is to a great extent obviated.

Vigilance is required in watching the re-awakening of the forces, and the production of re-action. It is not uncommon for it to occur in a single organ with great rapidity, and to occasion a fatal result. Apoplectic symptoms in this manner are often the immediate cause of death. In one case to which I was invited in consultation, a suffocating catarrh in one lung, with pneumonia in the other, were developed in the re-action, and destroyed the patient in a few hours, from the termination of the collapse.

The fourth period, or confirmed concentration and collapse, when completely established, must necessarily prove fatal in the great majority of cases. It is a moribund state. No method of treatment can be more than partially—very partially successful. The great object should be to prevent the disease from arriving at this period. The best system of treatment is that under which, in any given number of cases, the fewest reach this stage. The mortality of the disease is then inconsiderable. When collapse has been induced, the results of different methods will not vary to any great extent. No one can boast of more than few and scattered triumphs. The mass will and must perish. The vital lesions are too considerable, and vital functions too profoundly disabled to be restored with certainty by any human means.

It is an argument used by some, that because the patient is in a most critical and dangerous position, that, therefore, violent treatment and powerful remedies must be resorted to. This arises from the employment of figurative language and the personification of disease. The disease is a giant, and pigmy remedies cannot overthrow it. Such or similar expressions are employed. But the disease is nothing separate, nothing distinct from the organs. It is a modification, and effects arising from the modification of the organs. Remedies cannot influence disease independent of the structure. They are modifiers of the vital activity and movements of the tissues. When the vital forces are prostrated to the exceedingly low ebb, they are seen to be

in the period of collapse, the vital movements in the tissues nearly extinct, and the vital functions reduced to their lowest state. is there not a greater probability that violent—energetic treatment so called—and excessively perturbating remedies, will extinguish the feeble remains of life, rather than recall them to their wonted activity? This has been my impression, and such I believe the evidence afforded by my opportunities of observation."

Dr. Jackson's observations were made in a Cholera Hospital, of which he was physician-in-chief. It was open 34 days. The number of patients treated was 69, of whom 20 died.

The method pursued by Dr. J. is negatively characterized, by the comparative omission of calomel, internal stimulants and external heat.

We are indebted to the Gazettes for the experience and speculations of Professor Dudley, on the nature and treatment of Cholera. We have already spoken of its prevalence and great mortality in Lexington, Kentucky. During the visitation, that distinguished surgeon expressed himself as follows:

"While there is considerable variety of opinion about the remedies to be used, there can be no difference among medical men, about the necessity of correcting the morbid watery discharges, and of establishing thick or consistent evacuations from the bowels of every patient, the subject of cholera. Every physician and nurse concurs in sentiment, that upon the accomplishment of this object, depends the immediate safety, and the ultimate recovery of the sick; while it is admitted by all, that death must supervene where this is not effected."

When this is accomplished, the disease is, of course, already at an end. The condition of the digestive organs here spoken of, is a condition of health.

"The suspension of the healthy action of the stomach, liver and kidneys, in cholera, is familiarly known to every observer: nor is the pale, shrunken and cold state of the surface, with a consequent accu-

mulation of blood in the internal organs less satisfactorily understood. With these facts before him, recorded in the books, and made manifest in the appearance of the cholera patient, the practitioner is required to trace out the general principles by which he is to be governed in the administration of medicine."

Dr. D. recognizes in Cholera, the subversion of other functions than those of the stomach and bowels, but keeping the latter constantly in view, he proceeds to form his indications from their condition.

"Whatever the cause of the epidemic may be, the principal force of it is spent upon the digestive organs, and especially the stomach and bowels; while it is upon the same organs that medical impression is made with a view to cure. So far then as the cause of cholera may be conceived to be located in the stomach, emetics are suggested to the mind with a view to its removal, just as a person who had swallowed a dose of arsenic would expect relief from the same remedies."

We are scarcely prepared to go with our author in the views set forth in this paragraph. The Epidemic poison would seem to be one of the greatest subtility. It has certainly eluded *all* observation. Such a poison *may*, we admit, be swallowed, but where is the proof, whence the probability? The deglutition of an ethereal fluid, or of *such* a gas, as we may presume to occasion Cholera, would, we suspect, be rather a difficult function, and then, what is to detain in the stomach, a material of such great specific levity? Do not the gases generated there, escape perpetually by eructation? The idea of administering emetics for the purpose of expelling this rarefied poison, as we would expel a dose of arsenic, although entertained by Darwin, does not strike us very plausibly. Nor do we consider it necessary to employ an emetic for the purpose of arresting an attack of Cholera. Such an arrest may be very certainly effected, by means entirely different, in their *modus operandi*. A pediluvium, a warm bed, herb teas and a dose of laudanum, or Dover's powder, in the beginning of the malady, will commonly allay the gastric irritation, and avert the more formidable symptoms although they evacuate no poison, either solid, liquid, gaseous, or ethereal.

"I have long been in the habit of using active emetics successfully, in the convulsive forms of *hysteria*, proceeding from derangement of the digestive organs; and in cholera of the spasmodic form, I have not been less pleased with their effects; since they invariably mitigate, and generally subdue the disposition to cramps altogether. By the mechanical agitation of the internal organs from free vomiting, or high efforts to vomit, the blood is driven to the surface of the body, the coldness of the skin removed, the internal organs relieved in part of congestion, and the vital energies restored, where any power of reaction is left. Where reaction cannot be effected by emetics, the system is insusceptible of any impression. This remark is based upon the fact, that I have seen more cases terminate in death, without any manifestations of reaction, where no emetics had been used, than where they had been given with a liberal hand.

Again; emetics possess the power of suspending watery secretions into the bowels, when administered so as to excite free vomiting. But above all, I conceive them valuable, as possessing the faculty of arousing the stomach to the lively and active impression of calomel: a cathartic superior to all others, for the purpose of exciting bilious secretion, and of securing thick or consistent evacuations from the bowels."

We do not doubt that emetics are often productive of the benefits here enumerated. But we find in such results no evidence of a primary impression on the mucous membrane of the stomach, by an extraneous poison. If such an irritation possess the power of giving a centripital direction to the blood, engorging the portal circle, and depriving the muscles and skin of their due supply, how can a new irritant, such as tartarized antimony or ipecac. impart a centrifugal tendency, and restore the equilibrium? It should rather augment the very condition it is administered to obviate. Indeed, the beneficial effects of emetic medicines, would seem to us quite irreconcileable with the theory here adopted. But not to cavil on speculative points, let us ask, whether emetics are adapted to all cases of Cholera? Dr. D. seems to make no exception; and yet, we should think, they are by no means invariably proper. When the stomach is loaded, by a previous meal remaining undigested, or when full vomiting has not taken place, an emetic may produce the best effects; but in the absence of the former, and when the latter has occurred, we can see little reason for emetic medicines. Nevertheless, we are willing to grant, that they

sometimes revive the functions of the skin, and while we are compelled to believe, that the Professor's recommendation is too indiscriminate and general, we feel it a duty to say, that in the practice of some physicians, they have been too much neglected.

After vomiting, Dr. D. advises calomel, or calomel and opium, and when the system is descending into collapse, brandy in liberal doses has done good. The lancet he condemns as not being "justified either by science or the experience of professional men." It does not, however, appear that he ever employed it during the Epidemic. We are no friends to indiscriminate bleeding, any more than to indiscriminate puking; but we have certainly seen it do much good; and, by no means, understand, that its use is not justified by the experience of the profession.

Of the extent to which our author gave calomel, we are not informed. In one place he speaks of ten grain doses, and we presume him to have been temperate in his mercurial administrations. It would appear, however, that some of our friends in Lexington have given this drug in quantities which are as unprecedented, as the mortality which they sought to avert. We have understood, on pretty good authority, that some patients swallowed not less than a quarter of a pound in two or three days! This reminds us of a letter from a Louisiana correspondent, who, in speaking of the practice in yellow fever, says, "*I drew blood enough to float the General Jackson steam boat, and gave calomel enough to freight her!*"

From being the seat of a distinguished medical school, Lexington is a name of much authority among the physicians of this great valley. Not a county and scarcely a town in all the states south of the Ohio and east of the Mississippi, is without a graduate of the Transylvania school. To all such, the conclusions of its professors and their brethren, are likely to be of paramount influence, in regard to this new, mysterious, and baffling Epidemic. As public journalists, then, whose readers chiefly reside in states which remain to be visited, we have felt it a duty, to refer to the practice of our Lexington friends; and, by placing it in connexion with the desolations of the disease in

that city, to warn the profession against too implicit a reliance on the speculations and experience of those, whom, for many just and substantial reasons, they are accustomed to respect.

Of the extent of these desolations, we may judge from the fact, that about a fifteenth part of its population actually perished in the course of two weeks; notwithstanding the comparative absence of poverty, a dense and diversified population, stagnant waters, and public accumulations of filth. But additional evidence of the ravages of the Epidemic have been afforded us by private letters, from one or two of which we shall make such extracts as are adapted to the occasion. On the 13th of June, an intelligent and respectable friend, wrote as follows:

"Our physicians are nearly all *done up*—our stores are all shut—all business at a stand—hotels and taverns closed—printing offices closed—and in short, nothing but apothecaries' shops open. Within the last ten days, it is calculated, that not less than 300 victims have fallen. The *cases* are *numberless*. Nor are they confined to the intemperate, and dissolute, and poverty-stricken. The disease here has taken a more elevated range—many of the most respectable, and wealthy, and temperate have fallen.

"It is true, it has been most severe on the blacks, especially the *free blacks*. But several families of white cittzens have been annihilated, or nearly so. Most of the inhabitants who had the means, have fled—some to be brought back the next day on a bier; some to be buried in the country; and some, probably to escape the disease. For myself, having a large family, and no way to get off, I have remained; and, blessed be God! we are still safe. When I thought of flying, I knew not where to go—the country is full of Cholera. It is raging all around us. So I consoled myself with repeating the words of the Poet—"*Who fights meets death, and death finds him who flies.*" In short, the distress is beyond description! No city police—(at least *visible*)—no board of health—no medical reports—and the streets have for the most part the stillness which pervades the ruins of Palmyra. Such, my dear sir, is the city of Lexington.

"I leave you to imagine the picture of our distress. But I must still add, that the markets are suspended and the bakers' shops shut, with one exception. Not a pound of beef to be got—and very little else. Not even a cracker for sale in the city."

On the 17th, the same gentleman thus expresses himself:—

"It is now calculated—and they are beginning to muster up the names, &c. of the *missing*—that not less than 400 have fallen—and *two thirds of the population absent!* The general suffering has

been necessarily great—but cases of *individual* suffering would require volumes. For instance—while Mr. D. and his wife were *both dying*, at midnight, a young gentleman *alone* was attending them, when a loud rap called him to the door. It was a little girl 10 years old, begging him, "for God's sake, to come over the way and help her poor father—he was dying, and she could not get any body to come in." Her poor mother had been buried that afternoon. She returned and had to close his eyes alone. Hundreds of cases, even more affecting than this, might be enumerated. But I forbear. Our physicians say (as perhaps you do) that the disease is *under the control of medicine*, if taken in season—i. e. as I understand it, *before the Cholera sets in.* But, if *Cholera* is so easily cured, please tell me why our learned body of physicians have let 400 slip through their fingers?"

Having suggested, that perhaps some part of the great mortality at Lexington, is referable to a reliance, too exclusive, on certain remedies; and a rejection, not warranted by experience, of others possessing great power, we feel it a duty to say, that the extract just given, seems to disclose a cause of mortality entirely different. A panic had seized the inhabitants—they dispersed—they did not properly sustain each other—terror aggravated the disease and rendered medicine unavailing—the first stages of the malady, in which only, it can be successfully managed, were, no doubt, in numerous cases neglected, and when medical men were called in, it is quite obvious they were but poorly sustained. Mr. D. and his wife, respectable inhabitants, advanced in life, and living in the centre of the city—expired with a single person present, and he a young man! On the opposite side of the street, a man sickens and dies, with only his little daughter to nurse him and finally close his eyes! If our correspondent would consider these facts, he might find in them no unsatisfactory answer to his question, why the physicians suffered so many to sink. Wherever the moral courage of the community is greatest, and the inhabitants afford to each other the *earliest* aid, reciprocally inspiring hope and confidence, the epidemic, *cæteris paribus*, will be least destructive. It is impossible too often to repeat these important truths. They should be published far and wide; and by the whole power of the press and the *pulpit*, carried home to the minds and hearts of the entire population. Could this be done

in advance of the Epidemic, its shafts would fall harmless around the feet of thousands, otherwise doomed to perish.

For several weeks past the northern parts of Kentucky have been ravaged by the Epidemic. It *seems* to have extended from the river, at Maysville, into the interior, and yet it appeared at Lexington and Georgetown, *before* it broke out in Paris and Millersburgh, towns which lie on the great road leading to the ancient metropolis of the state. It is, however, by no means confined to the villages, but invades the most sequestered farm houses, where, in many instances, it has been more fatal, than in the towns. Among other spots it has put forth its power at the Blue Licks and Harrodsburg, old and salubrious watering places; at which not a few were assembled, under the delusive impression, that it would not visit such spots. So far from being safe situations, however, we have understood that the salino-sulphur waters of the Blue Licks, which operate as a cathartic, were found in several cases to be an exciting cause.

In all the towns and villages of the region where it prevails, a flight has been the consequence of its first appearance. The idea of contagion seems to have been uppermost in the public mind; and escape, regarded as the only preventive. Even the medical mind of that district of country, has been mystified by the same phantom; and in several places, the physicians have not only recommended flight to the inhabitants, but have actually flown themselve; leaving those who could not escape, to grapple with the danger as they might! It is with pain we record such occurrences; but they make a part of the history of the Epidemic, and throw much light on the causes of its great mortality, in a tract of country, where from the dryness of the calcarious soil, the abundance of subsistence, the comfortable style of llving, the orderly habits, and the gen-

eral intelligence of the people, a mitigated visitation might have been reasonably anticipated.

Last summer the same portion of the state was visited by the Epidemic, in the form of a mild diarrhœa, and in autumn a number of deaths occurred in Maysville, Lexington, and other towns; but it was decidedly fatal in Frankfort only; which, it is worthy of remark, remains almost unaffected the present summer, although most of the surrounding villages and farms are sorely afflicted. The same is true, in nearly an equal degree, of Louisville, which suffered much more, last autumn, than during the present spring and summer.

We have said, that the Epidemic seemed to *advance into* Kentucky from the Ohio river; from the same, it has appeared to advance into the State of Ohio. Many of the towns and villages on both banks of the river have been invaded and are now suffering, quite up to Pittsburg, which, although defended by a quarantine battery, 8 or 10 miles below the city, has had a number of cases. At Wheeling, not less than in Maysville, it was more severe and fatal. At Bridgeport, opposite the former, it proved suddenly and dreadfully mortal, though on the first day, almost all the inhabitants fled. Steubenville, Gallipolis and other smaller towns, as New Richmond, 20 miles above Cincinnati, are now suffering more or less. In the rear of all these places, indeed, in the southern portions of the State of Ohio, generally, as in the northern parts of Kentucky, it is daily manifesting itself in some new locality. Thus it seems, like the exhalations of the river, to spread from its valley over the adjoining parts of these two states, and equally, as we understand, over Indiana and Illinois. Indeed the region of country through which the river runs, is that, where, in the west, the disease is now most prevalent; its banks were the first affected, its bed *seems* to be the *nidus* of the pestilence. Thus the spread of Cholera in this country, affords, as it has afforded in all others, much *prima facie* evidence, of contagion—evidence which the credulous think conclusive, and the most philosophical find perplexing.

To this seeming proof of contagious dissemination, we may

oppose the unquestionable facts,—that diarrhœa or cholerine is generally prevalent throughout the same region; that fatal cholera has occurred, nearly at the same time, in places remote from each other; that the epidemic distemperature, appeared along the great rivers, on nearly the same days, from the Gulf of Mexico to the mountains; that some villages, at which steam boats have constantly landed, have not yet been attacked; that villages comparatively near to, and in constant intercourse with, towns where the disease prevailed, still remain unaffected, while others more remote are laid waste; as for example, Mayslick, 12 miles from Maysville, on the Lexington road, which remains untouched, while Flemingsburg, eight miles further off, and remote from the great highway, has already suffered to a degree seldom equalled any where; finally, that the experience of every day augments the number of cases, which could not have been contracted by exposure to others laboring under the malady.

Now, if *any* case of Cholera arise, independently of contagion, *every* case may, and from the moment when it is shown, that the disease can be produced without contagion, it is sound medical logic to conclude that no such principle exists. This conclusion, however, must not be regarded as definitive and final, unless it is shown, that a disease, which sometimes originates from some other cause than contagion, can never originate from that cause. Still, it is incumbent on the contagionists to make out every case by special proofs; but in attempting this, they must necessarily labor under this disadvantage—that as the atmosphere is impregnated with a poison which sometimes, at least, produces the disease, it is impossible, in the case in which it follows exposure to a choleric chamber atmosphere, to know whether the disease really arose from that cause. The individual might have been attacked from the other cause if he had not been subject to contact with the sick. In the case of one individual, only, this presumption might always be made; but what shall we say of those well authenticated instances in which several members of a family, and sometimes the visitors, are successively taken down, in places where the disease is not pre-

vailing? There are examples of this kind which, we must acknowledge, are embarrassing to the non-contagionists; but they do not *establish* the existence of contagion—they only render it probable. We shall cite a few not hitherto published.

Dr. B. F. Gard, of this state, has favored us with a letter, from which we make the following extract:

"I send you a notice of a few cases of Epidemic Cholera which occurred in the village of Lockbourne, 10 or 12 miles from Columbus, About the 20th of October, a family was landed from a canal boat directly from Cleaveland. It was reported by the family where they lodged, that the strange gentleman was afflicted with cholera morbus. The facts, however, soon showed that his disease was malignant Cholera, for he passed rapidly into a state of collapse and died in a few hours. On the following day, the wife of the deceased was attacked, and having concealed her situation for some time, medical aid was not obtained until the symptoms became alarming, and she died during the evening.

Three or four days from the death of the strange lady, the landlord and his wife both took the disease; and a poor woman, living three miles distant in the country, having visited the public house for the purpose of rendering some services, was also attacked soon after her return. These cases were treated by Dr. Burrle, of Bloomfield, a gentleman of considerable professional reputation. They all terminated fatally. The three other individuals were slightly attacked; they applied early for medical aid, and were soon restored to health.

It is a remarkable fact, that of all those who attended on the sick, only two escaped an attack of the disease; and, that among the citizens, not a single case occurred except in those who had visited the house above referred to; though there were among them, men of intemperate habits, and those who indulged in a free use of all the fruits of the season. They used no other preventive, than that of avoiding the house where the cholera was known to exist. In speaking of those who attended on the sick, I refer to those cases that terminated fatally, for it does not appear that the disease spread in any of the families where the milder cases occurred, as not more than one was attacked in the same family."

A second example of the same kind, is contained in the following extract of a letter from Dr. Greenleaf Norton, dated Decatur, O., June 26th, 1833.

"I reside in the country, 12 miles north of Maysville. About two weeks ago, midway between this and that town, and near the road leading to it, a man died with but 12 or 18 hours sickness, without having made any application for medical assistance. The day following I learned from his mother, who was with him from the attack to the

termination of the disease, the history of the symptoms, which satisfied me, at once, that it was Cholera Spasmodica. I had hitherto, never seen a case of that disease. Two days after his death, his brother sent me word that he had a "lax," and wished me to visit him. When I first saw him, the symptoms were, cold extremities, slight spasms, vomiting, &c. his pulse, though weak, was plainly perceptible. He was out of danger in twelve hours, though not yet entirely recovered.

Being called, two days after, to visit his wife, I saw her at 11, A. M. —she died at 2 P. M. the same day; she was attacked the same morning just before day, with the *formidable* symptoms, having had a diarrhœa 24 hours previous. Her daughter, 12 years of age, was attacked the morning following, at 8 o'clock, and died in 12 or 18 hours. Some 12 or 15 days since, a Mr. D. and son died 12 miles west of this place, of Cholera; as reported by a neighboring physician. A day or two subsequent to this, a Mr. M., son-in-law of D., living six miles west of this, who had, with his wife, visited their sick and dying relatives, was seized with diarrhœa; he took some medicine of his own prescribing; was considerably better, though not free from the "lax," rode about the country for two or three days, when vomiting suddenly commenced with an increase of the diarrhœa, coldness of the extremities, spasms, &c. His wife having had the "lax" for 24 hours, was attacked with vomiting, &c. at the same time with her husband. The mother of Mr. M. a sprightly old lady engaged in nursing them, about 10 o'clock at night began to vomit, and died a little after sunrise the next morning. I have learned since, that she had had diarrhœa for some days."

Much as these cases seem, at first view, to support the doctrine of contagion, we cannot regard them as conclusive. It does not appear that the individuals first attacked, had been exposed to the atmosphere of those who labored under the malady. They were the friends of each other. They were no doubt terrified and grieved. In common with the whole population on both sides of the river for some distance in the country, they were no doubt under the influence of the remote Epidemic power, and their emotions operate as exciting causes.

It has been said by the advocates of flight—the yellow fever is not contagious, and still, there is safety in escaping from the cities where it prevails, why, then, should not the people fly from the towns to the country, to avoid the Cholera? The answer is obvious. The poisonous atmosphere which produces yellow fever, is local, and in general limited to cities:—that which causes Cholera, is general, overspreading both town and

country, though in most cases manifesting itself first in the former. How then can we escape the disease by flying from place to place?

We shall conclude this long and desultory article with some account of the Epidemic as it now prevails in Cincinnati.

After its subsidence last fall, the city became healthy, except a moderate prevalence of Scarlatina, which was fatal in a number of cases, though the proportion of our juvenile population attacked by it was small. In some instances it was complicated with Cholera, and proved speedily mortal, with symptoms of collapse. The month of March was dry and healthy. April was unusually dry and hot--so that on the whole it resembled the month of May; which in turn had all the characteristics of the former, being showery and cool throughout, of course with the exception of an occasional hot day. The same remark is applicable to the present month, June, which has been extremely wet, and often so cool as to render fire and winter clothing acceptable. Though there have been much rain and many great and sudden depressions of temperature, there has been less thunder than usual.

On the afternoon of Thursday, the 11th of April, a violent tornado passed over the city and the country north of it, and was followed, as usual, by an exceedingly chilly state of the atmosphere.

On the two succeeding days, we met with several cases of serous diarrhœa and one of cholera morbus, attended with painful cramps of the stomach; which, however, yielded kindly to the usual treatment. But on Sunday morning, the 14th, we saw in consultation, a case of true Epidemic Cholera, which had commenced with copious diarrhœa, the night before, and proved fatal that day. Since then, the disease has prevailed, more or less, in every part of the city; and what is worthy of remark, has had, throughout most of the time, hebdominal exacerbations, much the greatest number of deaths having occurred on Friday, Saturday, Sunday and Monday. We had already made this observation ourselves, when our attention was directed to it by an inteligent medical friend, who felt convinced of its accuracy.

As there was nothing in the habits or pursuits of the people of the city, which could afford an explanation of this fact, we were, like Baron Humboldt, who illustrates the configuration of the mountains and valleys of Mexico, by a reference to the moon, naturally led to direct our attention to that planet, and upon consulting the almanac, which we hereafter advise all reviewers to keep on their tables with their dictionaries and grammars, we found that all the fulls and changes and quarters of the moon, for the succeeding ten weeks from the 11th of April, occurred on Friday, Saturday, Sunday and Monday. Of course we sought no further for an explanation of the phenomenon as none more convenient and satisfactory could easily be anticipated.

To what degree the Epidemic was revived by the hurricane of which we have just spoken, we are unable to say. It was more violent to the north of Cincinnati for sixty or seventy miles, than it was here; but it does not appear that the Cholera followed it any where back of the city. How far west or south-west of us it began, or how far it extended to the north-east, we are not informed; but from its width, its length must have been considerable; and if it influenced the reproduction of the Epidemic at this place, it should have had the same effect elsewhere.

From the time when the Epidemic re-appeared in April, to the present, a great number of our citizens have labored under cholerine or diarrhœa—the mild stage of the malignant Cholera. Children, however, have been less affected than adults, and ordinary cases of cholera infantum have been rare. The same is true of the cholera morbus of adults, which has seldom been met with. In most cases there has been a deficiency of bile. The discharges have been often black at first, but have constantly tended to a transparent or whitish character. Bile has very seldom been ejected by vomiting. In many instances the stomach has been sound and the appetite unimpaired, when great increased secretion and peristaltic action existed in the bowels. A number of cases of dysentery have occurred, and were generally more manageable than cases of Cholera. Their symptoms presented nothing uncommon, except that the stomach

was more irritable than it usually is in dysentery, and vomiting often supervened. As yet, but few cases of intermitting or remitting fever have occurred. But there has, on the whole, been more febrile action in the early stages of Cholera this spring and summer, than was observed last fall, and the functions of the skin have been less impaired. Most of the cases which have fallen under our observation commenced with diarrhœa, sometimes mild and running on without reducing the patient rapidly, but at other times, profuse and prostrating from the first. In general there has been less cramp and spasm this spring than last autumn.

As to exciting causes, they have not always been obvious. In one person the diarrhœa appeared to be brought on by eating a dozen unripe pears, and the vomiting immediately followed the loss of a dear friend. It proved fatal. In another, grief alone seemed to be the exciting cause. In another, the emotion raised by the departure of a beloved companion, for residence in a distant state, appeared to awaken the malady. In a patient, convalescent from another disease, it was evidently started by the excessive action of a dose of senna, and indulgence in a hearty dinner, *during* the operation. We have heard of several cases, in which it was excited by eating cherries immoderately. No instance of its being produced by intoxication has fallen under our observation, and most of those who have been our patients, have been persons of exemplary sobriety and good habits generally. This fact demands a moment's reflection. A delicate nervous temperament is a great predisposer to Cholera. Persons of this temperament are generally timid, and often circumspect to a fault, both as to the quality and quantity of their food and drinks. In reference to the former, they are not likely to be too particular; but it is quite possible to carry a system of abstemiousness too far. Whatever increases the debility and susceptibility of the system, favors the access of the disease. The firmer the health, and the more vigorous the circulation, provided it be equable, the greater the protection from the Epidemic. Good but regular living, is, then, the proper kind of living, when the Cholera is abroad in the land; and as to drink-

ing, it should, as near as possible, be what each individual is accustomed to, under ordinary circumstances:—care being taken, by those who sink their health, character, fortune, and the happiness of their wives and children in coffee houses, not to carry their drinking to *intoxication*, during the Epidemic. They can indemnity themselves when it has passed away, by getting "dead drunk," oftener than usual, and, thus in the end make up the sum total of their felicity. As the period for new cider is now approaching, it should be recollected, both in town and country, that no drink will be more likely to excite the disease.

The treatment of the Epidemic this spring, has not varied, materially, from that of the preceding autumn. Every day's observation has impressed us more and more deeply, with the great truth already repeated by us more than once—that *to be successful it must be early*. In its first stages, no disease is more amenable to medicine; as it progresses, its obstinacy increases in a higher ratio than that of any other malady—thus neglect is death.

In many cases when the physician is called early, bloodletting is a most valuable remedy. When collapse is approaching, or has become established, the lancet is of little avail, and has sometimes done harm. We have never yet seen the pulse rise after bleeding in any stage of Cholera.

Of emetics we have already expressed ourselves, at large, when speaking of the treatment of the malady in Lexington. We shall only add, in this place, that we have seen several cases, where the gastric irritability was greater after the administration of an emetic than before, but the reverse has sometimes been the result of their operation.

We have not seen the saline practice of Dr. Stevens tried this spring; but a great deal of soda water has been drunk, and apparently with advantage. We have prescribed "weak lye" (extemporaneous solution of the subcarbonate of potash) in a greater number of cases than last fall, and have been much pleased with its effects. We have very often combined paregoric with it. In some cases we have cooled it with ice—at other times administered it as hot as it could be taken. On

the whole, we regard it as a valuable remedy, adapted to every stage of the disease.

Opium and internal stimulants, have been used less liberally in the present, than the preceding visitation. The prevailing sentiment of the profession here this spring, has been against them. External irritation, commenced *before* the skin had become cold and bloodless, has zealous advocates, and is undoubtedly deserving of some confidence.

We have given the ethereal tincture of phosphorus, in a few advanced cases. It seemed, in some of them, to moderate the vomiting, but in no instance arrested the disease. We have seen the oil of turpentine administered liberally and perseveringly to one patient in the stage of collapse, but without success.

Enemata of starch, and strong coffee, or decoction of galls, with laudanum, have been repeatedly employed, in our own practice and that of our friends; although they sometimes restrained the diarrhœa, we have seen no case in which they seemed to contribute to a cure. Injections, rendered highly stimulating with powdered mustard, have also been administered, but with no better effect.

Ice and iced water have been used much more extensively than before. They are highly acceptable to all choleric patients, but their effects have not been so salutary as Broussais and other physicians of the continent of Europe, profess to have found them. We have given pellets of ice, repeatedly, to the same patient for 24 hours; but he died at last. We have, also, in a number of cases employed ice externally, especially over the epigastrium and umbilical regions. In one instance, lumps of ice were kept upon those parts for 26 hours, without intermission, during the whole of which time, the skin underneath, was as cold as death; while that of the feet and legs was warm; it was grateful to the patient, and when removed, the irritability of the stomach increased. It evidently did some service; but the patient ultimately died, not, however, in the stage of collapse, but of consecutive fever. On the whole, we regard ice as a valuable remedy, but believe its powers to have been greatly

overrated. We have met with no case in which it appeared to do harm.

Calomel seems to have maintained itself in the confidence of the profession, and is given in almost every case. Some physicians administer it in drachm doses; but the greater number limit themselves to 20 or 30 grains, frequently repeated. All the patients, as far as we know, who are salivated recover. Calomel seldom purges in Cholera, and often tranquilizes the bowels; but is sometimes dislodged from the stomach, though when given in powder, it has been supposed to be more difficult of ejection, than any other medicine. In the forming stages of the disease, the blue pill is serviceable. We are strongly impressed with the opinion, that the cure of Cholera, in a great degree depends upon restoring the lost secretory function of the liver. In the first stages, this is easily accomplished; but in the advanced, nothing is more difficult. As an adjuvant to the calomel, we have derived some advantage from the nitrate of potash, which is well calculated to act on the kidneys, while it probably, exerts a beneficial influence on the blood.

The sudorific treatment has been less employed than before; partly, we presume, on account of the greater heat of the weather, in the present than the former visitation. We are disposed to think, that this method is too much neglected. Speculatively, we are even inclined to believe, that if the patient were treated from the beginning with sudorifics, the result would be satisfactory. For instance, suppose, on taking to his bed, he should do nothing but drink an infusion of *Eupatorium perfoliatum* (thoroughwort) impregnated with the alkali of wood ashes, as hot as it could be swallowed, would not a copious perspiration at length ensue, and the disease suffer arrest? we are really inclined to recommend this simple method, under the impression, that in all cases in which the functions of the skin are maintained, recovery follows.

To stop the vomiting in the latter stages of the disease, we has given ammoniated alcohol, and lime-water and milk, but with no very satisfactory result. Camphor, in small doses, has sometimes done good. The oxide of bismuth, and musk

which especially has been lately extolled, we have not seen used.

We have, thus, given a brief, but comprehensive account of the prevalent treatment of the Epidemic, in its present visitation. In conclusion, we shall add, that for the 10 or 11 weeks which have elapsed, since the Cholera re-appeared among us, it has prevailed in every part of the city, and affected persons of all ranks; but seems to have been less fatal to negroes, compared with whites, than it was in the autumn of 1832. This is, perhaps, conformable to a general law of the Epidemic, by which, in its first visitation, it carries off the greatest proportion of those who are largely exposed to its exciting causes. What number have died is not very accurately known; but it cannot be far from 200; perhaps, something more, or three *per diem;* which is one a day, for every 10,000 inhabitants, a rate of mortality about one-seventh of that of 1832. Then, however, the Epidemic ceased after the fourth week, while it now remains unabated, after nearly three times that period.

Miscellaneous Intelligence.

ANALECTIC, ANALYTICAL, AND ORIGINAL.

I. Analectic.

1. *Professor Ehrenberg's discoveries relative to the Structure and Functions of the Infusoria.*—If the obscurity which involves many of the most interesting phenomena in human physiology be ever dispelled, it can only be by the lights furnished by comparative anatomy, and we therefore conceive that we cannot occupy a few pages better than in devoting them to an account of the discoveries of Professor Ehrenberg, of Berlin, relative to the structure and functions of the Infusoria. These discoveries constitute an epoch in that department of science, both from the capital discoveries already made as well as from the direction they give to future researches. The best account we have seen of these discoveries, is that by Dr. Gairdner, in the *Edinburgh New Philosophical Journal*, for September, 1831, and we shall make free use of it in making up the following sketch of the structure and functions of the Infusoria.

Our readers will perhaps be surprised at the mention of the structure and functions of animals, the discovery of whose mere existence has been until recently deemed the ultimum of zoological research, and regarding whom, the sum total of our knowledge has been hitherto confined to a few details on their external forms and active motions. Yet, in the midst of their transparent tissues, the German naturalist has, by a peculiarly ingenious method of observation, developed a highly complicated organization, which with those who arrange the animal kingdom in a linear series, will remove them far from the extremity of the scale. The existence of a digestive, muscular, and generative apparatus, is established beyond doubt; and organs have been also discovered, which bear great analogy with the vascular and nervous systems.

Before entering into the detail of the organization of the infusoria, it is proper to state briefly the method by which the organs are rendered visible. This consists in furnishing the infusoria with organic coloring matter for nutriment. Simple as this may appear, it was not until after ten year's observations, that Dr. Ehrenberg succeeded in selecting the fittest substances, and in applying them in the manner best adapted for the satisfactory exhibition of the phenomena. It was not until he used pure indigo, that these experiments succeeded in a de-

sirable manner. Immediately on a minute particle of a highly attenuated solution of this substance being applied to a drop of water containing some of the pedunculated vorticella, (which are best adapted for the first observation,) and placed under the object glass of the microscope, the most beautiful phenomena presents itself to the eye.—Currents are excited in all directions by the rapid motion of the cilæ, which forms the crown round the anterior part of the animalcule's body, and indicated by the movements of the particles of indigo in a state of very minute division in different directions, and generally all converging towards the orifice or mouth of the animal, situated not in the centre of the crown of cilæ, but between the two rows of these organs which exist concentric to one another. The attention is no sooner excited by this most singular and beautiful phenomenon, when presently the body of the animal, which had been quite transparent, and bearing much resemblance in aspect to some of the marine Rhizostomæ, becomes dotted with a number of distinctly circumscribed circular spots, of a dark blue color, exactly corresponding to that of the moving particles of indigo. In some species, particularly those which are provided with an annular contraction or neck, (such as the *Rotifer vulgaris*,) separating the head from the body, the indigo particles can be traced in a continuous line in their progress from the mouth to these internal cavities.

It is requisite in these experiments to employ coloring matter which does not chemically combine with water, but is only diffused in a state of very minute division. Indigo, carmine, and sap green, are three substances which answer very well the necessary conditions, and are easily recognised by the microscope. But whatever substance is used we must be very particular that it contains no lead, and impurity which very frequently enters into the colors of commerce.

The microscope which Dr. Ehrenberg has used in all his investigations is one constructed by Chevalier of Paris; it possesses a power of 800. In very few cases, however, is it necessary to use the higher power, and only to demonstrate the existence of an internal cavity in those species which do not exceed from 1-1500th to 1-2000th of a line in diameter, such as the *Monas termo*, *atomas*, and *lens*, and which almost elude the power even of so powerful an instrument. In almost all cases, a power from 300 to 400 is sufficient; and Dr. Ehrenberg has made all his observations and drawings of the structure of the *Hydatina senta* with a power of 380.

In conformity with the great axiom of scientific observation, to measure every thing which is capable of measurement, Dr. Ehrenberg has not neglected to express in numbers the dimensions not only of the totality, but also of the integrant parts of these beings, placed as it were at the verge of organised nature. For this purpose he uses a glass micrometer, constructed by Dolland, which gives directly the ten-thousandth part of an inch, and permits of a much smaller quantity being correctly estimated, as it contains the astonishing number of 400 equal parts distinctly cut in glass within the space of half a line. By means of a micrometer screw, which has been since constructed by Pistor of Berlin, he has been enabled to measure directly 1-48000th

of an inch, or 1-4000th of a line, a degree of minuteness which is never necessary in actual practice.

1. *Digestive System.*—By the use of coloring matter in the way above-mentioned, a digestive system has been demonstrated in ***all*** the genera of this class of animals, distinctly characterised by Muller.—This fact Dr. Ehrenberg states in the following proposition: "All true infusoria, even the smallest monads, are not a homogeneous jelly, but organised animal bodies, distinctly provided with at least a mouth and internal nutritive apparatus." In none has the cuticular absorption of nutritive matter ever been observed, which had been the opinion of all previous writers upon the subject, not from any positive observations, but merely from their inability otherwise to explain the nutrition of these animals. Generations of these transparent gelatinous bodies may remain immersed for weeks in an indigo solution, without presenting any colored points in their tissue, except the circumscribed cavities above referred to; and when in a state of activity, the minute particles of indigo and carmine are seen to hurry rapidly over the whole surface of their transparent bodies, in order to reach the mouth, generally situate at one or other of their extremities. Indeed there is no necessity of having recourse to such a supposition, when we can clearly see the prehension of coloring particles, their reception into a mouth, and conveyance from thence into an internal stomach or stomachs.

The alimentary canal presents, as in other classes of the animal kingdom, the utmost variety in respect to form, situation and degree of complication. It is in the *Monas termo pulvisculus*, and other larger monads, simply a round sac in the centre, and occupying the greater part of their bodies. In the genera *Enchelys Paramœcium* and *Kolpoda*, it assumes the form of a long intestinal canal, traversing the greater part of the body, and at times convoluted in a spiral manner, which is furnished with a great number of cæcal appendages, or stomachs; this singular disposition, of which no other example occurs in the animal kingdom, is particularly distinct in the *Leucophrys patula*. That these blind sacs are real stomachs, and do not at all correspond to the cæca of other animals, is evident from the fact of their being filled with coloring matter immediately on its being received at the mouth, or anterior orifice of the canal. The tubes which connect these sacs to the main canal of the intestine, vary very much, both in length and in diameter, as well among the different cæca, as in the same one at different times, being usually in a state of great contraction, and at times scarcely perceptible when the cavity to which it belongs is empty, and may be supposed not to be in a state of activity.—We can count from one hundred to two hundred of these sacs in the course of the intestines of the *Paramœcium chrysalis* and *aurela*.—When they are filled with coloring matter, the common intestinal tube is usually quite empty and transparent, this, joined to the bluish, reddish or greenish tint which they often assume when empty, may have been the reason that these sacs were mistaken by Muller for ova, and by Schweigger for internal monads still adhering to the parent trunk. In other infusoria, as the *Rotifer vulgaris*, the alimentary canal is in

the form of a slender tube, and extending nearly the whole length of the body, and terminating at its anal extremity in a dilatation of cloaca for the reception of the ova and the male seminal fluid, previous to its termination at the surface of the animal. Others of larger dimensions, as the *Eosphora najas* and *Hydatina senta*, and in general all the natural group of the *Rotatoria*, possess a single cavity of considerable size and oval form, situate in the anterior part of the body; the *Zygotrochis nudis* would seem to form an exception to the general rule of this division; for this animal, when filled with coloring matter presents a slender, spirally convoluted intestine in the centre of the body. In this animal also, the posterior cloacal dilatation is enlarged into a considerable cavity, which can retain the coloring matter for some time previous to its being discharged by the anus.

The number of stomachs varies no less than their form. The whole tribe of the *Rotatoria*, as already observed, possess but a single cavity. In the *Monas termo*, four can be reckoned.

The number of sacs, which are so many distinct digestive cavities, although connected together by a common tube, varies from 1 and 200 down to 36 in many *Vorticellæ*. The largest number is in the *Paramæcium chrysaiis*, Muller, where it amounts to 120, and yet there is ample space for still more.

The *anus* is easily distinguished from the mouth, when the animal is filled with colouring matter, by its discharge from this orifice, in large irregular coherent masses, very different in appearance from the minute state of division in which it enters by the mouth. Its position varies exceedingly; in the greater number, such as the *Hydatina senta*, *Rotifer vulgaris*, and *Eosphora najas*, it opens towards the posterior extremity of the animal; in the first of these it is on the back. In the *Kolpoda cucullis* it opens into the concave surface of the animal, close to the mouth, from which it is only separated by a tongue-shaped eminence. In some of the spirally pedunculated vorticella, its disposition is very singular, opening along with the mouth into a common fissure, which is not situate in the centre of the circular ranges of ciliæ which surround the anterior extremity of the body, but towards the margin, between two of these concentric circles.

The *mouth* merits the notice of the systematologist, from the very precise characters which he can draw from thence for his subordinate divisions. This organ reaches its greatest complication in the *Hydatina senta*, where it consists of an orifice opening in the centre of a globular head, and provided with a pair of serrated mandibules, each resembling somewhat the single mandibules of some of the mollusca, such as the common *Helix pomatia*, or those of the echini. When the animal is in the act of taking its food, these mandibules are in perpetual motion, opening and shutting with great rapidity, to absorb the coloring particles brought within their reach by the currents excited by the motions of the ciliæ. This very singular organization is certainly one of the most curious phenomena visible in their whole structure, and is perhaps one of the most important, as showing so close an approximation to animals far removed from them in the zoological series. Each mandibule in the species which I examined, possessed

five distinct teeth, but the number varies from two, three, as far as six. Dr. Ehrenberg has since succeeded in demonstrating their real nature, by the use of very fine foliæ of mica, (the whole animal is not more than one eighth of a line in length,) and has come to the conclusion that they are separate, simple, hard bodies, enveloped with a fleshy covering, which are ingrained into one another like the fingers of the hands when joined.

The mouth of the other infusoria is a simple unarmed opening surrounded more or less closely with a greater or less number of ciliæ.—Its position generally determines their anterior extremity. In the genus *Paramœcium*, it is in the middle of the length of the animal.—The *Kolpoda cucullus* possesses a sort of lip surrounding its margin.

The ciliæ play a very important part in the economy of this class of animals. They may be considered as the principal organs of taste, of touch, and of propulsion. When the animal is at rest, they are often quite imperceptible, but on the addition of a small portion of coloring liquid to the drop of water, they become very apparent, being in a state of great activity, seeming to be the principal agents by which they excite those currents which afford so beautiful a spectacle under the field of the microscope.* In the *Monas pulvisculas*, and other larger monads, their number amount to 10 or 20, and we may from this conclude that they exist even in the smallest monad. They sometimes surround the mouth in a single row, (*Vorticella convallaria*, *Rotifer vulgaris*,) sometimes in a double row, (*Vorticella citrina;*) occasionally they extend in regular lines, or are irregularly dispersed over the whole surface of the body. The former disposition occurs in the *Leucophrys pyriformis* and *patula*, the latter in the *Actinophrys sol.* They occupy, in other cases, only one side of the body, (*Kolpoda cucullus.*)

An *œsophagus* can only properly be said to belong to those which, like the *Eosphora najas*, and *Hydatina senta*, possess a notable contraction between the mouth and the stomach. This is especially distinct in the latter, where I have distinctly traced the passage of individual colored globules along this narrow canal from the mouth to the intestine.

Perhaps this is the most appropriate place to notice an organ of a very obscure nature, which Dr. Ehrenberg dignifies with the name of a pancreas. It is in the form of two kidney-shaped, grayish-white, glandular-looking transparent bodies, which are placed on each side of the upper extremity of the intestine, firmly connected to, and closely embracing it. Dr. Ehrenberg regards them as bearing a greater analogy to the pancreas than to the liver of the higher animals, from their color, form, and connexions. They must, however, be left to further inquiries.

*One of the most favorable moments for seeing these ciliæ to advantage, particularly in those species in which they invest the whole surface of the body, is when the drop of fluid under the microscope is nearly dry, when they may be seen elongated to their utmost, in a state of great activity; or if the animal be nearly expiring, in a state of rigid erection.

2. *Muscular System.*—A fibrous muscular tissue being the proper agent of all voluntary contraction in the animal kingdom; we might, *a priori*, expect its existence in the class of infusoria, which are so remarkable for the rapidity and energy of their movements of propulsion and translation. In the former they can only be compared with fishes, and in the latter with insects. Contractility of tissue can never explain those active voluntary efforts by which they avoid obstacles when swimming in myriads in a single drop, convey the nutriment towards the mouth, and perform the acts of deglutition. Previous, however, to Dr. Ehrenberg nothing like the muscular fibre had ever been attempted to be shown in these animals.

As yet, from their extreme tenuity, no distinct fibres have been detected in the second and more minute division styled by Cuvier Homogeneous Infusoria, and the new system of Dr. Ehrenberg *Polygastrica;* although from their extremely vigorous contractions, as well as from their presence in the division of the Rotatoria, we are entitled to infer their existence. In this last, distinct fibres are perceptible in the *Eosphora najas*, *Rotifer vulgaris*, *Philodina erythrophthalma* and *Hydatina senta.*

We shall select the muscular system of the latter, the *Hydatina senta*, as a specimen from its greater distinctness and complexity.—The perfectly transparent gelatinous body of this animal, when seen through a microscope with a power of 380, appears to be traversed longitudinally by several narrow bands of fibres, perfectly transparent, and of a grayish-white color. When the animal throws itself into its violent lateral contortions, the fibrous bands are observed to shorten, become broader and thicker, (from their slightly diminished transparency,) on the side towards which the contractions are made; and on the convex to become so extremely elongated and attenuated as to be almost, in some cases quite imperceptible. The real muscular nature of these organs, and that they are the real agents in effecting the motions of the animal, is thus placed beyond all doubt. These muscles never lose their apparent state of tension, which they would undoubtedly do on the contractions of the animal, if their nature was of another description; and when the two extremities of the body are equally approximated to each other, none of the bands become invisible, but all increase to nearly twice their former breadth, with a corresponding diminution of their transparency.

The envelope of the body of the hydatina consists of a double transparent membrane, the two layers of which are in contact with, and scarcely distinguishable from, each other, when the animal is in a state of repose. But, upon the contractions of two or more of the muscles, the internal membrane into which they are inserted becomes separated to a greater or less distance from the external. During the whole of these phenomena, the stomach, ovaries, and the whole of the viscera, are perfectly visible through the transparent muscles.

These principle muscles are four pairs, which take their origin from the opposite ends of the animals, and proceed in a radiated manner to be inserted by broad striated bands near the middle of the body, (between the fourth and fifth pair of twigs given off from what Dr. Ehren-

berg calls the great dorsal vessel.) The four upper or anterior muscles rise by narrow insertions from the junction of the head with the body at the root of the rotatory organs; the four posterior or inferior, from the point of insertion of the bifid tail into the body. The extent of insertion of these muscles is much greater in the *Eosphora*, *Philodina* and *Rotifer*, than in the *Hydatina*; in them it reaches at least from the second to the sixth of the above-mentioned transverse twigs.

These great longitudinal muscles are distinct to the most unpracticed eye, but Dr. Ehrenberg views as of a muscular character, 1. The seventeen sections of the rotatory organ in the Hydatina, which must be the principal agents in directing the motions of the cilæ; 2. A contraction or sphincter near the extremity of the cloaca; 3. A striated organ behind the cloaca, which he considers, from its situation, as an accelerator of the seminal fluid, a *musculus ejaculatorius*. In none of these, however, except in the last, can the existence of a fibrous tissue be considered as beyond a doubt; though, from their situation, it is more than probable that this is their true nature. All of these parts seem to be attached to the inner layer of the external double membrane, and to be unconnected with the subjacent viscera. It is not improbable that the tail may possess some proper muscles, as its motions are not performed laterally in common with the trunk, but by an alternate retraction and elongation.

3. *Generative System.*—The partisans of the *generatio spontanea* vel *primitiva*, who so long stood their ground in the class of Entozoa, after being forced to relinquish this position, by the discovery of the ova of these parisitic animals, took refuge in the darkness and obscurity of the miscroscopic infusoria, where they were almost secure of an undisturbed possession, while there was nothing known concerning them except a homogeneous mass of transparent jelley, endowed with a few active motions; and where their negative arguments could only be attacked by analogical reasonings.

The candid and impartial mind of Muller himself, too rigid an observer to be seduced by the allurements of theory, considered the infusory animals as furnishing an incontrovertible argument of the existence of certain living forms, which are neither of oviparous nor gemmiparous organs, but derive their existence immediately from a certain indestructible living generative energy inherent to all matter—for this very plain reason, that he had never witnessed the secrets of their origin. Such a conclusion, though perhaps too hasty, is allowable in such an observer. When, however, we see other men of distinguished talent, such as Treviranus and Oken, taking up the question, where, if it were possible, they ought to have ended, and assume for once the existence of a mysterious power inherent in organic matter of generating infusory and other molecular animalcules, which form by their aggregation all organic living forms, and into which the latter are, at the cessation of their proper vitality, again resolved; we cannot help referring them to the well known maxim of Bacon, that "Homo naturæ minister et interpres tantum facit et intelligit quantum de natura ordine re vel mente observaverit: nec amplius scit, aut potest."

The observations of Dr. Ehrenberg have not only given an additional extension to the great principle of Harvey, *omne vivum ex ovo;* but have, by a connected train of ocular demonstration, proved the existence in this class of the whole three species of generation, the viviparous, the oviparous, and gemmiparous, and even of the simultaneous exercise of two of these in the same individual, at different epochs of its existence. Waiving at present the corroboration which this might give to the view of infusory animals forming a parallel series to their more apparent prototypes, let us proceed to state shortly a few examples of each of these varieties.

In the interior of the *Rotifer vulgaris* we often see young animals of a diminutive size, (that of the parent varying from one-fourth to one-eighth of a line,) perfectly formed, and near the period of exclusion, which already possess the two red points, (eyes,) near the anterior extremity, and a distinct mouth and head. They assume various postures in the interior of the parent trunk, being at times coiled up in a spiral form, or extended to their whole length. These same fœtus, if we may so call them, Dr. Ehrenberg has seen excluded in a living state from the parent. All the individuals of the *Hydatina* are hermaphrodite, possessing the completely formed male and female organs. The female consists of an ovarium, which, when in the unimpregnated state, is an oval perfectly transparent bilobed bladder-like body, closely embracing the lower part of the intestinal tube. When in an impregnated state, it increases very much in size, being augmented by the addition of two or more oval appendages, so that the whole mass fills the greater part of the posterior half of the body of the animal. When quite ready to burst it assumes a greenish-gray color. These rounded bodies communicate by a canal, scarcely perceptible in the unimpregnated state, broad and distinct when nearly ripe, with the cloacal dilatation formerly noticed as existing near the anal orifice of the intestine. That the ova are not internal germs, an opinion entertained by many older observers, such as Lamarck and others, is proved not only from the above-mentioned development and connexions of their containing vesicles, but also by the distinct existence of the three substances which in the ova of the Entozoa, M. Rudolphi considers as the chorion, allontois and amnion. In the centre of many ova there can be recognised a darker point, which is either the embryo, or cicatrix in which the latter is developed.

The adult Hydatina possesses, besides, two organs which Dr. Ehrenberg considers as the male organs of generation, but the real nature of which is a little more doubtful than that of the preceding. They resemble very much in form the milt of fish, consisting of two elongated bodies, extending nearly the whole length of the animal, exterior to the ovaria, broader towards the head, diminishing towards the tail. They terminate, (a strong corroboration of this view of their true nature,) in a number of spirally convoluted tubes, which finally open by two separate canals immediately behind the oviduct. These spiral convolutions are enveloped by an organ of a very singular nature, the functions of which are very obscure: it is oval, transparent, remarkable for its irritability and sudden changes of form; at one time swell-

ing out into a vesicular form, at another contracting into a small glandular looking organ. Dr. Ehrenberg at one time considered it to bear some analogy to a uterus; but it is more probably connected with some office in applying the seminal fluid to the ova previous to the exclusion. This organ is wanting in the *Rotifer* and *Philodina*, where the male apparatus otherwise resembles very closely that of the Hydatina.

In the *Kolpoda cuculus*, the parent animal excludes the ova in the form of extremely minute globules, bearing much similarity to some of the species of the genius *Monas*, connected by a number of fillaments interwoven together in a reticular form. In an animal 1-24th of a line in diameter, that of the ova was 1-1000th of a line. The young Kolpoda were 1-144th of a line before they were distinctly seen to excite currents, and swallow the colored particles. In the genius *Vorticella* there seems to be a combination of the oviparous and gemmiparous generations. The single species *Convallaria*, has from their entire ignorance of its mode of developement, been subdivided into no less than six distinct genera, by different observers, according to the variety in its form at different stages of its existence. It first appears in the form of minute points, not more than 1-1000th of a line in diameter, scattered upon the peduncles of a group of adult Vorticellæ. After a time these minute points enlarge in size, and send out delicate pedencular prolongations to the larger adult roots, in which state Schrank styled them *Vorticellæ monedicæ*. When still more advanced these peduncles become coiled up in a spiral form. And when they may be considered as having reached their complete organic developement, though still much inferior in size to what they afterwards attain, the usual currents may be observed in the colored solutions in which they are immersed. The same species propagates itself by germs, on the separation of a part of its body from the parent trunk.—This is performed in three different ways, each of which has been dignified with the title of a distinct form.

The first is the longitudinal division in which the animal divides itself into two nearly equal halves. A fissure first appears traversing the whole length of the body; this becomes deeper anteriorly, where two horns are now visible, each provided with a distinct set of ciliæ, and a mouth, recognisible by the two currents of coloring particles directed to the apices of the two horns. The fissure becomes deeper and deeper, till they form two distinct, perfectly formed animals, attached to the apex of a single peduncle; one of these is soon detached from the latter, when it agrees in form exactly with Lamarck's genius *Urceolaria*. When the same animal moves with the hinder part forward, it forms Schrank's genius *Ecclissa;* when the conical basis by which it was attached to the peduncle, has not quite disappeared, it forms Bory de St. Vincent's genius *Rinella;* and when a little broader and more bell-shaped, with apparently only two ciliæ, it is the genius *Kerobalanus* of the same author; when fully provided with ciliæ, without any remaining vestige of the conical appendage, it is the genius *Craterina*. This Vorticella also passes through the same phrases of a *transverse* division into two equal independent animals. The third method is the true gemmiform division, as in the Hydræ and Planariæ,

in which a small bud is given off from the posterior surface of the animal, which is provided with ciliæ, and when saparated from the parent trunk, is still of a very diminutive size.

Such are a few of the observations on the generation of these animals, from which it will be seen that they are but in their commencement, and that much remains to the patience and labor of future observers.

4. *Vascular System.*—The existence of a digestive, a muscular and, a generative system of much complexity, and very far from what we might consider as their simplest expression, may now be viewed as an ascertained fact with regard to infusory animals. The existence of the two systems which remain for our attention, viz: the vascular and nervous, is as yet somewhat problematical. The organs on which Dr. Ehrenberg confers these appellations, are very apparent, but much doubt exists with regard to their real functions.

What has been denominated a vascular system is distinctly visible only in the *Hydatina senta.* Traces of a similar arrangement are now and then perceptible in the *Eosphora,* in particular positions of the animal, but they quite disappear when the integuments are in a state of strong tension. In the former, a series of transverse lines of a white color, and inferior transparency to the rest of its body, succeed one another at regular intervals, from the head towards the tail. These transverse striæ might at first be taken for muscles, but they differ from these entirely in their aspect and connexions. They are nine in number, exactly parallel to, and nearly at equal distances from, each other. At first sight they seem to be complete rings encircling the whole body; but, upon a closer inspection, they are observed to diminish in breadth, and finally vanish on approaching the inferior or abdominal surface of the animal. On the contrary, they augment in diameter towards the back, where they all terminate at right angles, in a line, of an exactly similar appearance to themselves, running in a longitudinal direction from the head to the tail. This longitudinal line or vessel is nearly twice the caliber of any of its tributary traverse twigs.

It will be observed that, the disposition of this main dorsal trunk, with its collateral branches, is almost exactly that of the vascular system of the Ascidia, so beautifully demonstrated by M. Savigny, which is a strong argument for their being of the same character, No motion of an internal fluid is discernable in their interior, nor has any pulsation, analogous to a heart, been ever observed. Both these phenomena, which would decide the question as to their true nature, Corti asserted that he had observed in the *Rotatoria* and *Brachionus,* but he was deceived by the tremulous motion of the canal, leading from the mouth to the œsophagus. The same was the case with Gruithuysen, who mistook the motion of the intestine in the *Paramæcium aurelia* for that of a sap-like fluid. It is worthy of note, that these white striæ are attached to the internal, not the external tunic of the integuments.

5. *Nervous System.**—This name is given to a series of six or seven round glandular-looking, grayish bodies, which envelope the upper or dorsal part of the œsophagus of the *Hydatina.* They are closely connected together, and are distinguished from all the other viscera of the body by their darker tint. The uppermost of these bodies, (ganglia,) or that scituate in the mesial plane, is much larger than the rest, and gives off, from its apex, a slender branch which proceeds upwards towards the integuments at the back of the neck a little before the second pair of vascular twigs, where it forms a slight enlargement, (ganglion;) it does not stop here, but returns back and unites again, not with the large ganglion from which it was originally given off, but in one of the adjacent smaller ones. A complete circle is thus formed, bearing some resemblance to the nervous circle, which encircles the œsophagus of the mollusca, except that in this case the whole circle is situate on the dorsal or upperside of that canal. From the point of contact of this nervous circle with the dorsal vessel, it gives off two very slender twigs forward to the anterior part of the head, where, in other forms of the Rotatoria, such as the *Rotifer vulgaris*, the two red points, (eyes,) are situate. In some, such as the *Eosphora najas*, a single large red point is situate on the back of the neck, in the exact position of the ganglion at the apex of the circle.† The above-mentioned large mesial œsophageal ganglion, (brain,) sends off posterioly another branch of much larger size, backwards along the abdominal surface of the animal, which closely adheres to the internal layer of its double envelope.

That these different fillaments and ganglia, to which we have given the name of nerves, are not muscles, is evident from their form, their mode of insertion into the integuments, and because in the contractions of the animal they are not shortened, but assume a serpentine form, being apparently quite passive. They are not vessels, because no pulsation nor motion of a contained fluid has been hitherto perceived through their transparent tissues. If they are not organs of an entirely unknown nature, the whole analogy of their form and position, compared with that of the nervous system in other invertebrate animals, favors the idea of this being their true nature.

We may here consider as appendages to the nervous system, those colored points situate in the anterior part of the head of these animals, and most usually on the dorsal surface, which have been considered as

*According to all our ideas of known physiological laws, the existence of active voluntary motion presupposes the necessity of an animating nervous system. Hitherto, however, no attempt had ever been made to prove its existence. But here again in these animals, excluded by their delicacy and minuteness from the ordinary means of anatomical investigation, the transparency of their tissues, as it has enabled us to discover the existence of a muscular, has no less assisted us in the more than probable discovery of its necessary appendage, a nervous tissue.

†The best view of the disposition and appearances of the œsophagael ganglia is got from the dorsal side of the animal, in a line with the great dorsal vessel. The nervous collar given off from the brain, is however, best seen on a lateral view.

eyes. As already noticed, the first discovery of these organs was made in 1816, by Nitsch, who saw in the *Cercaria viridis*, (now referred by Dr. Ehrenberg to the genius *Euglena*,) three black scaliform points. In the *Rotifer vulgaris*, their pigment is of a red color, and they are three in number, two small ones at its anterior extremity, and a single larger one at the nucha in the situation of the apex of the above-mentioned nervous circle in the *Hydatina*; and it is very probable that the two filaments, which in the latter animal are sent forwards from this ganglion, or even the ganglion itself, subserve the purposes of vision. The number, disposition, and color of these points is the same in the *Eosphora najas*, where the mesial eye is still larger and more distinct. In the *Philodina erythrophthalma* their color is the same, but they are only two in number, (the most common disposition in this class,) much smaller, and situate more posteriorly. In the *Lapadella ovalis* one only is visible of considerable size in the mesial situation of the large one of the Eosphora.—*Amer. Jour.*

2. *Physiological Investigations arising from the Mechanical effects of Atmospherical Pressure on the Animal Frame.*—The weight of the atmosphere, though not constantly the same, varying from 1-12th to 1-15th of its whole weight*, on an average amounts to fourteen and a half pounds on each square inch of surface; and to this pressure the human body in common with all other objects is subjected. The whole surface then of a middle-sized person will have to support from fifteen to twenty tons of pressure, all acting inwards and tending to compress the body into a less compass. Now the question arises, how is it that the animal frame is utterly insensible of the whole, or of any part of this enormous pressure upon it. Mr. Dalton, in a late volume, (Vol. X.) of the Manchester Memoirs, has attempted a solution of this question, and we shall lay before our readers the views he has presented.

It is pretty well known that the *specific gravity* of living men in general, is less than that of water.† Mr. Robertson, formerly librarian to the Royal Society, found that if ten men taken promiscuously, one of them was a little heavier than water, and two nearly the same weight as water, two others were only about .8 the weight of water—and the other five were of intermediate specific gravities. The average of the ten was—height, 5 feet 6 3-4 inches—weight 146 lbs.—specific gravity, 1.891—bulk, 2.618 cubic feet. From this Mr. Dalton thinks that it may be safely inferred, that the body of a full-grown living man, when plunged over head in water, will be found to average nearly .9 of the weight of an equal bulk of water.

"It is remarkable," observes Mr. Dalton, "that all the component parts of the animal frame, as least of the human subject, are severally specifically heavier than the whole body, with the exception of air.—Bone, muscular flesh, blood, membrane, &c., are all heavier than wa-

*These variations are gradual, so that it requires some days or weeks before the weight passes from one extreme to the other.

†Phil. Trans. Vol. 50.—Hutton's Dict. Sp. Gr.

ter: animal fat is, perhaps the lightest of the components, but even this is heavier specifically than the whole man upon the average.—Bone from the leg of a calf I found to be 1.24 specific gravity. The lean of beef, (raw,) I found 1.045 specific gravity. Blood is from 1.03 to 1.05 specific gravity according to circumstances:—on the whole, the solid and the liquid parts of the body examined after life is extinct, would appear on an average to be somewhere about 5 per cent heavier than water.

"That part of the volume of man which is exclusively occupied by air, and which may therefore be considered as adding nothing material to the weight of the body, consists of the air-tubes and air-cells of the lungs, the trachea or wind-pipe, the mouth and other appendages. It is not easy to ascertain the medium volume of air in the lungs of any individual. Messrs. Allen and Pepys found the air remaining in the lungs of a man after death somewhat exceeded 100 cubic inches. I found formerly that after a full inspiration I could blow out 200 cubic inches of air from my lungs, but was then quite exhausted. My ordinary inspirations and expirations amounted each to about 30 cubic inches.*

"Judging from the above facts and considerations I should be disposed to conclude that the medium volume of air in the lungs of a middle-sized person would not be less, but rather more than 100 cubic inches. Besides the lungs there are no other receptacles for air, I believe, in the body, except the stomach and bowels, which are occasionally more or less inflated with portions of air either from the atmosphere or from other sources. If we allow 150 cubic inches for the volume of air, contained in the whole man when entirely immersed in water, it will be as fair an estimate perhaps as can be made. But it may be imagined by some that the whole surface of the body is pervious to air; that the skin, the flesh, the blood, and even the bones, may be imbued with air, somewhat in the same manner that water is, and yet have no cavities or cells in which the air is collected into a visible volume. Whether such an idea has ever been entertained or discussed I am not aware; but I presume no one has succeeded in determining either the nature or the quantity of the air so enveloped in the system. We shall now examine how far such a notion is countenanced by the preceding statements of facts.

"According to the preceding table of Robertson the average bulk of the ten men was 2.618 cubic feet—4500 cubic inches nearly; but of this volume 150 inches according to the above estimate were air, and the remainder 4350 inches were solid and liquid parts of the body. Now the average specific gravity of those parts of the body has been estimated above at 1.05 when examined as dead matter; this would make their weight equal to 4567 cubic inches of water; whereas it was found by actual weighing to be 146 lbs. as per table—4044 cubic inches; hence the observed weight was less than the calculated weight, a portion equal to the weight of 523 cubic inches of water, or more than 1-9th of the whole weight of the body."

*Memoirs Vol. II. (new series, p. 26)

This discrepance demands investigation. Mr. Dalton thinks that it is not likely that Robertson's table of the specific gravities of men give too low an estimate; be this as it may, it certainly is not true as stated by him, that the human subject generally floats in water *until the lungs become filled with that element.* Dr. Cullen in many dissections found no water in the lungs; and Dr. Goodwyn's experiments which are conclusive on this subject, show that only a very small quantity of water enters the lungs of drowned animals.* The specific gravities of the component parts of the body appear not to be overrated—and it will hardly be contended that the lungs of a middle-sized man will hold a medium state of inflation six times the volume of air Mr. D. has assigned.

Upon the whole, Mr. Dalton "is inclined to believe the true explanation of the difficulty will be found in this, that the whole substance of the body is pervious to air, and that a considerable portion of it constantly exists in the body during life, subject to increase and diminution according to the pressure of the atmosphere, in the same manner as it exists in water: and further, that when life is extinct, this air in some degree escapes and renders the parts specifically heavier than when the vital functions were in a state of activity.

"The facts that water absorbs air of all kinds, that the quantity of air absorbed is proportional to the pressure and density of the gas, whether it be alone or mixed with other gases, and that certain laws of equilibrium take place, by which water acquires that state in which it is disposed neither to give out nor take in any more gas, have been abundantly proved by Dr. Henry and myself. M. Saussure has shown the like for other liquids, and for a great number of solid bodies. It may be seen, too in my Chemistry, vol. 1st, page 236, that a bladder, which is generally considered as an animal membrane least pervious to air, may be filled with one gas, and being sometime exposed to the atmosphere, it will be found to continue full blown as at first, but the contents will be chiefly atmospheric air. Messrs. Allen and Pepys in their ingenious and excellent essay on respiration, have proved that when a Guinea pig, or a pigeon is confined, for an hour, more or less, in a mixture of hydrogen and oxygen gases in proportion as 78 to 22, a large portion of azotic gas is found in the residue and an equal portion of hydrogen disappears. They ascribe this change to effects of respiration; but it appears to me more probably due to the principle we are advocating; namely, to the egress of azote from the whole body, and the ingress of hydrogen in lieu of it, in consequence of withdrawing the external pressure of the former and substituting that of the latter.

"When the palm of the hand is placed over the top of the receiver of an air-pump, and the air is exhausted, the pressure of the air on the outside is scarcely felt, but the inside is swollen and feels as if it was drawn or sucked into the receiver. Thus the sensation is on the inside and not without; the reason is, there is no change of pressue on the outside; but there is within, and the consequence is a tendency of

*See article Asphyxia in the forth-coming Medical Cyclopedia.

the air in the hand to escape into the receiver, which occasions the pain and swelling. It is thus also that the issuing of blood in the surgical operation of cupping is effected.

"Though it does not seem of much consequence what the pressure of the air may be on the animal frame, within certain limits, yet sudden changes must always be accompanied with uneasy sensation. Climbing mountains, or ascending in a balloon, removes a part of the atmospheric pressure from the body; this causes the air in the body to tend outwards, and sometimes occasions bleedings. To supply oxygen to the lungs a greater volume of air must be breathed, and this seems to produce an acceleration of the pulse. On the other hand, by descending thirty or forty feet deep into the water in a diving bell, the pressure of the air upon the body is increased inwards; pains in the ears are felt from the difficulty of suddenly restoring a disturbed equilibrium; but if the descent is slow and interrupted, time is given for the air to enter the pores, and the pain is less sensible. To what limit warm-blooded animals could bear the rarefaction of air so as to subsist, has not that I am aware of, been determined with much precision.—Ascents in balloons have been made till the atmospheric pressure was reduced more than one-half. Formerly I found that a mouse could subsist in air of one-fourth atmospheric density, and seemed not to have suffered much; but upon reducing the density below one-fourth, the animal was convulsed and expired immediately, notwithstanding the air was instantly admitted.

"If the view we have expanded in this essay, in regard to the action of ariel pressure on the animal frame, be correct, it may be inferred, that the pressure admits of great latitude; perhaps an animal could subsist under the pressure of one-half an atmosphere, or of three or four, or more atmospheres. The uneasiness and danger would be found in the quick transition. If time is allowed for the air to enter the body, and to escape from it, the transition is gradual, and the sensation arising from it imperceptible. The animal economy would be adapted to it, like as in the transition from a cold to a warm climate. It may hereafter be found, what length of time is sufficient to adjust the equilibrium, and whether this subject is any way connected with certain diseased states of the body. As far as regards the absolute pressure on the body, and our insensibility of it generally, this question will be met by the argument, that the air within the body, by its elasticity, sustains a corresponding pressure from without; but this only accounts for our alleviation from a small fractional part of the whole exterior pressure. The greater part must still be supported by the body; and we must have recourse to the great incompressibility of matter to account for our insensibility of pressure. Canton found that water, pressed by one atmosphere more than ordinary, only exhibited a reduction of 1-21740th part of the whole; if the same rate, applied to the compression of the human body, the reduction or compression of the size of a man, 4500 cubic inches, would only be 1-5th of a cubic inch, for the weight of an additional atmosphere. Now as the body consists of solids and liquids of almost incompressible matter, and there is only a small part of the volume consisting of elastic fluid that is compressi-

ble, no material change of volume can take place, but on the sudden transition from one atmospheric pressure to another, and unless a change of volume take place, we cannot feel any pressure, either inward or outward. The phenomena of the water-hammer show, that the particles of water are hard, as they strike each other like flint and steel; and it is exceedingly probable that other bodies, solids as well as liquids, are constituted in like manner. A general pressure on the system then, only increases in a small degree the attraction of the ultimate particles, and it is met by a corresponding increase of repulsion from the atmosphere of heat; so that the system remains, as nearly as possible the same, and unaffected by such pressure."

3. *Quantity of Food taken by a Person in Health compared with the Quantity of the different Secretion during the same period.*—The Fifth Volume of the *Memoirs of the Literary and Philosophical Society of Manchester*, contains an account of a very interesting series of experiments on the quantity of food, taken by a person in health, compared with the quantity of the different secretions during the same period; with chemical remarks on the several articles; by JOHN DALTON, F. R. S. The first series of experiments was made upon himself, in the month of March, for fourteen days successively. The aggregate of the articles of food consumed in the fourteen days was as follows: of bread, 163 oz. avoir. oat cake, 79 oz.; oat meal, 12 oz.; butcher's meat, 54 1-2 oz.: potatoes, 130 oz.; pastry, 55 oz.; cheese, 32 oz.; total of solid food, 525 1-2 oz. avoir.; averaging 38 oz. daily. Of milk, 435 1-2 oz.; beer, 230 oz.; tea, 76 oz.; total, 741 1-2 oz. avoir.; average 53 oz. of fluid daily. Thus it appears that the daily consumption was 91 oz.; or nearly 6 lbs. During the same fourteen days, the total quantity of urine passed was 680 oz.; and the fæces, 68 oz.; the daily average is consequently of urine, 48 1-2 oz.; of fæces, 5 oz.; making 53 1-2 oz. The quantity of food taken daily having been 91 oz., there remains 37 1-2 oz. to be accounted for, which must have been spent by the insensible perspiration from the skin, and that from the lungs conjointly, on the supposition that the weight of the body remained stationary.

To try the effect of different seasons, Mr. Dalton resumed these investigations in the month of June the same year, and continued them for one week successively. The results were what might have been anticipated; a less consumption of solids, and a greater of fluids; a diminution of the evacuations, and an increase in the insensible perspiration. The following were the results: solids consumed in seven days, 236 oz.; average, 34 oz. per day; fluids, 391 oz.; average, 56 oz. per day. Total per day, 90 oz.; or 4 oz. less per day in solids; 3 oz. more in fluids than in the former trial. The daily averages in the evacuations were, urine, 42 oz.; fæces 4 1-3 oz.; leaving a balance of nearly 44 oz., for the daily loss by perspiration, being an excess of about 6 oz. above that in the former season, or one-sixth more, owing no doubt to the higher temperature.

Another trial of a week's duration was made in September, with results nearly similar to the last. The daily consumption of food was, 93 oz.; and the perspiration nearly one-half that quantity.

Mr. Dalton next varied the process, with the view to obtain the quantity of perspiration and the circumstances attending it more directly. He procured a weighing beam, by which he could weigh his body, so that the beam would turn with one ounce. Dividing the day into periods of four hours in the forenoon, four or five hours in the afternoon, and nine hours in the night, or from ten o'clock at night to seven in the morning, he endeavored to find the perspiration corresponding to these periods respectively. He weighed himself directly after breakfast, and again before dinner, observing neither to take or part with any thing during the interim, besides what was lost by insensible perspiration; the difference in the weights, in this case, was the loss by perspiration. The same procedure was adopted in the afternoon and in the night. This train of experiments were continued for three weeks in November. The mean hourly losses by perspiration were, morning, 1.8 oz. avoir.; afternoon, 1.67 oz.; night, 1.5.—During twelve days of this period, Mr. Dalton kept an account of urine, corresponding in time with perspiration. The ratio was as forty-six to thirty-three, which is somewhat a greater disproportion than that observed in March; probably owing to the lower temperature of the weather in November.

These experiments were made forty years ago, but animal and vegetable chemistry being at that time in their infancy, no deduction of any interest could be made. The progress which this branch of physiology has since made, enables us now, however, to approximate very closely, to the quantities of the several chemical elements to be found in the great variety of products of the two kingdoms.

Bread and farinaceous vegetables appear to constitute the greatest part of ordinary food. Mr. D. has found that 5 lbs. of flour make 7 lbs. of bread. Now from this analysis of flour, Mr. D. estimates the carbon in bread at 30 per cent. Twelve ounces of bread, (the daily average in his first set of experiments,) must then contain 3.6 ounces of carbon. Seven ounces of oat-cake and oat-meal he estimates to contain 1.8 ounces of carbon; four ounces of pastry to contain one ounce of carbon; nine ounces of potatoes to contain nearly one ounce of carbon; four ounces of butcher's meat, and two ounces of cheese, together about three ounces of carbon;* thirty one ounces of milk, eleven-twelfths of an ounce. Twenty-two ounces of tea and beer would contain only a small fraction of an ounce of carbon, not easily estimated, and of little account by reason of its smallness. The amount of the element carbon then in some state of combination taken into the stomach, by different kinds of food, was 11 1-2 ounces.

According to Berzilius, the urine of healthy persons differ materially according to circumstances, but upon an average it may be reckoned to consist of 93 or 94 per cent of water; the rest consists of many substances; the carbon contained in which cannot be estimated at more than one or one-fourth per cent. from the analysis hitherto made. This will give .5 or .6 of an ounce of carbon in 48 1-2 ounces of urine per day. According to the same chemist, fæces may be es-

*According to Gay-Lussac's experiments.

timated as containing 75 per cent. of water, and the remainder does not seem to contain more than ten parts of carbon. This would give half an ounce of carbon in five ounces of fæces. Hence we may infer that one ounce, a little more or less of carbon, is carried off from the body daily through these two channels. The remainder 10 1-2 ounces must therefore be spent in the insensible perspiration.

The quantity of insensible perspiration from the skin cannot be easily determined by direct experiment; but that from the lungs may be approximated from known facts.

Mr. Dalton has shown* that he produced by breathing in twenty-four hours, 2.8 lbs. troy of carbonic acid gas—.78 lbs. troy, of carbon= .642 lbs. avoirdupois,=10 1-2 ounces nearly. He has also determined† that the quantity of aqueous vapour which he exhales from his lungs does not exceed 1.55 lbs. troy,=1.275 lbs. avoirdupois,=20 1-2 ounces avoirdupois. If to this we add 10 1-4 ounces of carbon, we have 30 3-4 ounces for the carbon and water expended from the lungs in one day, and this taken from 37 1-2 leaves 6 3-4 ounces per day, for the insensible perspiration from the skin, which if the above estimate be allowed, must consist of 6 1-2 ounces of water, and 1-4 of an ounce carbon. According to this, the matter perspired from the lungs is five times as much as that from the whole body.

If instead of carbon, we trace the element azote into and out of the body, it will appear that from the butcher's meat, cheese and milk, about 1 1-2 ounces of azote was taken into the stomach daily, and nearly as much passed off by urine and fæces.

"Upon the whole we may observe," remarks Mr. Dalton, "that of the 6 lbs. of aliment taken in a day, there appears to be nearly 1 lb. of carbon and azote together; the remaining 5 lbs. are chiefly water, which seems necessary as a vehicle to introduce the other two elements into circulation, and also to supply the lungs and other membranes with moisture. Very nearly the whole quantity of food enters into the circulation, for the fæces constitute only 1-18th part, of these a part bile, must have been secreted; one great portion is thrown off by means of the kidneys, namely, about one-half the whole weight taken, but probably more or less according to climate, season, &c.; another great portion is thrown off by means of insensible perspiration; this last may be subdivided into two portions, one of which goes off by the skin, amounting to one-sixth part, and the other five-sixths are discharged from the lungs in carbonic acid, and in water or aqueous vapor."

4. *Experiments on Hemlock and Henbane.*—Professor Geiger, of Heidleberg, whilst recently engaged in making chemical experiments, succeeded in establishing some remarkable illustrations of the active principles of hemlock. Its base is an organic salt, which opens an entirely novel series of these highly interesting organic substances, for it is volatile, and similar to a volatile oil. The peculiar qualities of this substance, both intrinsically, and when brought into combination with acids, its rapidly changeable character, and the brilliant play of colors

*Manchoster Mamoirs, Vol. II. New Series. †Ibid.

which it exhibits whilst undergoing change, render it one of the most interesting productions in organic chemistry. Its poison is of the deadliest description. The smallest quantity, applied inwardly, produces paralysis; and one or two grains are sufficient to kill the largest animal. Another of Professor Geiger's late discoveries is the active principle of henbane, (*atropin,*) its base is likewise an organic salt, but it is tenacious, admits of being reduced to a crystal, forms a crystalline salt with acids, like hemlock, and has a disagreeable smell, though it is not volatile, unless it be subjected to a decomposition.—Its poison is quite as deadly as that of the former, but exhibits dissimilar appearances, and is not so rapid in its effects. Animals, where even a minute dose is administered, become languid, cannot stand upon their legs, are attacked by convulsions, and die within six hours. The effect of this poison in dilating the pupil of the eye, is extremely remarkable. The minutest portion of it, when applied to the eye of a cat, produces a dilatation of the pupil for the next four and twenty hours; and the hundredth part of a grain prolongs the appearance for the next seven or eight days, besides inducing other singular symptoms of poisoning.—*Rep. Pat. Invent. March*, 1833.

5. *Cold Dash in Convulsions of Infants.*—The application of a small stream of ice-cold water to the head, is recommended by Richter in his *Specielle Therapie*, as very successful both in the convulsions and coma of hydrocephalus. This practice is also pursued by Dr. Heim, of Berlin, and repeated so long as the fits of insensibility continues. The neck and shoulders ought to be covered with oiled silk, and the body kept warm. Dr. Graves, of Dublin, recommends a similar practice.—*Dub. Jour.*

6. *On the excision of Hæmorrhoidal Tumors.*—In our last No., p. 513, we gave an extract from a clinical lecture of Baron DUPUYTREN'S on this subject. In a subsequent lecture the Baron offered some interesting remarks on the consequences of the excision of hæmorrhoidal tumors. These remarks are so important that notwithstanding their length we give them in full. We take them from the report in our cotemporary, the *London Medical and Surgical Journal.*

Dr. Marx has inquired of me, observed M. Dupuytren, if we should not *always, and in every case cauterize immediately after the operation*, rather than run the chance of internal hæmorrhage, which presents the serious danger we have already explained. I agree with him, for it results from the recapitulation of a great number of hæmorrhoidal extirpations, which I have performed at the hospital, as well as in the city, that this consecutive internal hæmorrhage came on unexpectedly in two-fifths of the cases of operations which have not been cauterized; never on the contrary, has it taken place in cases where the cautery has been used. The question then to be decided is, are the inconveniences of cauterization preferable to the dangers to which the patient is exposed from hæmorrhage? Now it may be remarked to me, that no comparison can be made between them, that the inflammation and tumefaction which occur after cauterization, the irritation which

extends to the rectum and urinary organs, generally yield to the simple treatment which I have before pointed out, and have never been followed by fatal effects; while on the contrary, internal hæmorrhage puts the patient's life into the most imminent danger. Let us suppose a case where some circumstances would not permit assistance to be given in time to the patient attacked by internal hæmorrhage, he will perish, and the operator will feel the greatest regret for not having prevented this accident by using cauterization. Finally, it may be said to me, that since this hæmorrhage occurs in a great many cases, and that it is impossible to know *a priori*, if the patient that is to be operated on may be one of the few who escape this accident, why not admit it as a principle that cauterization should always be used. I acknowledge that these considerations appear to be just, and they will lead us without doubt to modify the treatment which we have used to this day in these cases. A treatment as certain in stopping hæmorrhage, is the introduction of a pig's bladder stuffed with charpie into the anus. Though it succeeded in the first operation of this kind that I performed, says M. Dupuytren, I preceived that it was very annoying to the patient, and that it was almost always expelled involuntarily by spontaneous efforts, which were induced by its presence.—The other consequences of the excision of hæmorrhoidal tumors are much less dangerous and less unpleasant. There frequently appears a considerable tumefaction of the cellular and adipose tissue of the anus; the principal inconvenience attending this tumefaction is the severe irritation of the rectum, in consequence of which the patient, during four or five days after the operation, feels it quite impossible to go to stool: but the aperient and the enema being again administered, strict regimen being observed, this want will be very much moderated, and will remove a constipation of some days, which would be otherwise annoying. This tumefaction may also cause a retention of urine, but we possess most efficacious means of removing this; as for the tumefaction, it yields quickly to the application of leeches, emollient fomentations, baths, &c. The pain attendant on excision is intense, but almost instantaneous, and this annoyance, which is inseparable from the slightest operation, should not be weighed against the pain and danger caused by the disease. After the operation the patient is liable to different affections, which ought to be the special objects of the surgeon's attention, and which it is in his power to prevent.

It must be acknowledged that persons affected with disorganized hæmorrhoids; are reduced to a state of profound anemia, to asthenia, brought on by the abundance and frequency of hæmorrhages or seropurulent discharges. These evacuations, to which the patient has for a long period been subject, cannot be suddenly stopped without causing a reaction in the whole systen; a general state of *artificial* plethora is induced, sanguine congestions take place in the lungs, liver, and brain, and affections of these organs may follow. The patient is often seized with syncope, spasms, giddiness, and falls into a state of alarming insensibility; the arteries pulsate with such violence that one would think that there was aneurismal diathesis, if these anormal pulsations

were not changing every instant their seat and form; and it is a remarkable fact, that this plethora coincides with a pale complexion, the skin generally yellow or earthy colored, especially the face, and with great weakness. Repeated bleeding for sometime, and at short intervals, if the patient is young, vigorous and robust; and if the discharge from the anus has been sanguine, the introduction of a seton and of a cautery, if the discharges were of a purulent nature; these two remedies combined, if the case require them, gentle laxatives frequently administered. These are the most approved remedies, and this is the most rational prophylactic treatment we can make use of to prevent a plethora, the existence of which would lead to the most serious danger. When the excision of the external tumor is performed, the cicatrix which remains, either from constriction of the sphincter, or from the tension of the teguments and of the anus, is sufficient in the greater number of cases to oppose efficiently the protrusion of the internal tumor, and we can then dispense with having recourse to the excision of the latter. Beside, the second excision, like that of the external tumor, is generally without injury, and the patient is completely cured of the disease. Excision may sometimes be followed by contraction of the anus. J. L. Petit has reported a case where the contraction was such, that the pipe of a syringe could scarcely be introduced; and this accident can be prevented by introducing into the intestines large wicks, and by renewing them until the cure is perfect. Let us now apply the directions given by M. Dupuytren, his particular practice, and that of his hospital will furnish us with a number of cases. 1st observation.—A shoemaker about thirty years of age, came sometime since for advice for hæmorrhoidal tumors, which weakened him very much; his trade obliged him to sit continually bent; but he attributed his disease to a visit he made in Champagne, where he indulged in numerous excesses in the wine of that province. It was at that time in fact, he first perceived that tumors had formed at the verge of the anus. They were at first very small, very slightly painful, and only protruded when the patient went to stool; they afterwards increased considerably in size. These tumors, as in many other cases, presented two stages, one which may be called inert, during which time the hæmorrhoids did not discharge, or the discharge was a slight serous oozing, without any inflammatory symptoms; the other stage, designated hæmorrhoidal crisis, is perceived by swelling inflammation, severe darting pains, a considerable discharge of blood, afterward of sanguineous serosity. These crisis returned more frequently, their duration increased, the sufferings of the patient became more violent, and his health suffered great injury. When he came to the hospital he was weak, emaciated and yellow; he walked quite bent, and could not straighten himself. This position resulted from a considerable protrusion of the hæmorrhoids, which was at least as large as the fist of a child of seven or eight years old, and was composed of two tumors, one internal, and the other external. The patient was besides affected with obstinate constipation, which is often the consequence of an irritation, which extends itself to the rectum, and of a retention of urine, a complication not less common than the preceding,

M. Dupuytren recommended the administration of enemas, and the use of baths; by these means the retention of the urine was removed, but the fæcal matter remained. The swelling of the hœmorrhoids was much diminished, there was less redness, the patient suffered much less. There is no doubt that leeches, emollient fomentations, baths, enemas, rest, and proper drink, will not cure the actual crisis, but it is evident that such treatment will palliate it, and that accidents will reproduce this affection at an epoch more or less distant, according to the hygenic state of the patient.

We may be asked, perhaps, what inconvenience would result from the use of this palliative treatment at each return of the crisis? It is this treatment adopted by many physicians; it is also preferred by many patients who dread the operation. It sometimes happens that the temporary relief retards the return of the crisis, and renders them more unusual; but more frequently they reappear, and the health of the patiant visibly alters.

This motive, however allowable it may be, should not be put in comparison to the dreadful effects which the continuance of the disease would bring on; the tumours, external as well as internal, often become schirrhous; sometimes the latter, on its development, recedes up the rectum, to a height which we cannot attain, and the disorganization extends itself in the inside of the intestines. If to these disagreeable consequences you add the general state of the patient, who presents a severe affection of the system, you will think with me, says M. Dupuytren, that it is necessary to practice excision in the actual crisis. But again, do not think that in giving this opinion, I mean that the extirpation of the hæmorrhoids should always be practised; I have pointed out before in what circumstances they should be left to nature, and when they should be removed by cutting instruments. After these preliminary considerations, M. Dupuytren directed that the patient should be brought. He lay on the bed on his knees and elbows, his thighs separated, and with the scissors before mentioned, the professor excised the hæmorrhoidal tumors; after the excision the wound was not cauterized. Cauterization, though certain in its results, has something appalling to the spectators. I have seen you shudder more than once at the sight of the red iron, and the cloud of smoke which rises from the cauterized part; you may judge what an impression such a preparation would produce on the friends and relations of the patient, who are not, like you, accustomed to such scenes.

Meanwhile, fearing that the hæmorrhage would supervene, we recommended the surgeon of the ward to watch the patient with the greatest care, and to apply the cautery if the blood began to flow in the rectum. It was also to avoid this disastrous occurrence, that we made it a rule not to apply the dressings for some hours after the operation, because it is to be feared that the dressings would only hinder the blood from flowing out, and thus cause it to flow back into the superior intestines.

What we apprehended, continued M. Dupuytren, happened the next day, an internal hæmorrhage manifested itself; the pupil of the ward was not mistaken, from the symptoms we had so plainly pointed out;

he had recourse to the means that have always succeeded with us.—He gave him an enema, which brought away a great quantity of blood, a second enema brought a considerable clot; he then made the patient strain, first, to expel any blood that might remain, and secondly, to cause relaxation of the sphincter, and exhibit the surface of the divided arteries; then he applied to the bleeding parts two red hot iron instruments. The hæmorrhage did not reappear, and from this period the patient no longer experienced cholic pains, or syncope.

The quantity of blood lost in this operation has been estimated to be three, four and five pounds. It flows into the descending colon, also the transverse and ascending, and as far as the cœcum, but never beyond this. The patient, whose case we are describing, presented a complete assemblage of the symptoms of the disease, and the consequences of the operation. From the effects of cauterization he experienced a retention of urine, when it was necessary to use the catheter; after the evacuation of a great quantity of urine, he feels great pain, which does not cease till the organ returned to its usual state. But the inflammation and swelling caused by cauterization are already diminished, the patient is going on well, and in about fifteen days he will be cured.

Finally, we know that persons affected with hærmorrhoids are subject to obstinate constipation; in this case it lasted for several days; excision as it often happens, had increased it. We have already remarked, that we should not induce stool until the inflammation and swelling have decreased or even disappeared; because before that time, the fæcal matter cannot be expelled without causing violent pain, augmenting the irritation, and tearing the parts. It was not until after this time that enemas and gentle aperients were administered.—The sixth day after the operation, all these accidents were dissipated, he went with ease to stool, he had no pain and wished to be discharged.

Second observation.—About fifteen years ago, a very wealthy banker, about forty-five years of age, of a bilious temperament, consulted the Baron Dupuytren for hæmorrhoids that were constantly in a state of hæmorrhage. These sanguineous discharges had reduced him to a state of great debility and anemia. Pale and debilitated, he visibly emaciated; he was unable to attend in his counting-house; to write a letter was very fatiguing, and almost impossible to him. M. Dupuytren, after examining him, recognized the existence of internal hæmorrhoids, and proposed excision, which was quickly agreed to. Some days after, he proceeded in the following manner:—The patient having taken an enema and a hip bath, lay on the edge of the bed, the thighs separated: violent strainings protruded the hæmorrhoids, which were immediately seized with a forceps with large blades and excised, not without much trouble; no external hæmorrhage manifested itself. M. Dupuytren did not leave the patient; at the end of a quarter of an hour he perceived him become pale, fall into a state of weakness more and more decided, the pulse became small and hard, a cold perspiration covered his body, he felt a sensation of heat in the abdomen,

which was continually ascending. From these signs the professor could not doubt that internal hæmorrhage had ensued. He immediately recommended the patient to make expulsatory efforts, and a great quantity of scarcely coagulated blood was discharged; cold injections were useless, the hæmorrhage was not stopped; then a pig's bladder stuffed with *charpie* was introduced; this succeeded completely, but it was not without great difficulty that it could be kept in its place, involuntary expulsatory efforts tended incessantly to displace it, and actually did so several times. This hæmorrhage weakened the patient very much, and would undoubtedly have been fatal if it had not been arrested so promptly; in a short time the cure of the patient was completed.

Third observation.—The banker whose case we have just considered, had a brother at Berlin, who had almost the same symptoms; this person heard of his brother's cure, and wrote to M. Dupuytren. After the report of a celebrated surgeon of Berlin who attended him, M. Dupuytren was quite convinced of the existence of similar internal hæmorrhoids, and recommended excision. But the accident that happened to the firstbrother had suggested to him a means of effectually stopping the hæmorrhage, and consequently, obviating the greatest danger attendant on this operation. He gave written directions, and advised cauterization, with a *cauterie en haricot* if the hæmorrhage manifested itself. The surgeon at Berlin did not follow these directions; immediately after the operation he quitted the patient. Not long after his departure, symptoms of internal hæmorrhage presented themselves; the patient became faint, pale and covered with cold perspiration. One of this young brothers, who had been present at the first operation discovered the cause of the malady, and sent for the surgeon immediately, without being able to find him; time was lost, and the danger was imminent; the younger brother had the presence of mind to introduce the bladder, as he had seen it done, into the anus, and stuff it with lint and succeeded in stopping the hæmorrhage, but the loss of blood was so great that the patient was a long time before he recovered.

Fourth observation.—A broker, the father of a numerous family, suffered for some years from internal and external hæmorrhoids, by which he was more and more incommoded; he was in such a state as to be unable to walk more than sixty paces without stopping to lean against a stone stud, to gain a momentary relief from his sufferings. Finding that he was obliged to give up his business, and wishing at any price to preserve the power of providing for the wants of his children, he came to M. Dupuytren, who examined him and perceived a double hæmorrhoidal tumor, being in every way two inches and a half in diameter; blood and pus were discharged frequently, and the schirrhous disorganization appeared very great. M. Dupuytren proposed excision to him. Some fatal cases which recently happened under other surgeons, having made great noise, and this man having heard of them, the proposal made him shudder. M. Dupuytren had great trouble to convince him that cauterization of the vessel was sufficient to obviate all fatal consequences. At length the patient

consented to allow the operation; but he wished to go to the Hotel-Dieu, as he would be better watched, and in order at the first appearance the hæmorrhage might be combated. The excision was made, some of the vessels were cauterized, and on the twelfth day the patient was perfectly cured.

Fifth observation.—M. Ex——, a Scotchman, a cavalry officer in the service of the King of England, unmarried, about forty years of age, of a sanguine temperament, experienced, for more than three years great sufferings, caused by internal hæmorrhoidal tumours, which protuded on the least attempt to go to stool. As the fatigues of his profession considerably augmented the annoyance, he came to Paris to consult M. Dupuytren. In compliance with his advice went into a *Maison de Sante*, where he was operated on by this celebrated surgeon, in the following manner:—The patient lay on his side and made efforts as if at stool; the upper thigh was raised up by an assistant, the operator seized each tumour with a large indented forceps, and with a very sharp bent scissors, excised them successively. There were three tumors, not very volumnious, and as there was but a trifling effusion of blood, M. Dupuytren thought that cauterization might be dispensed with. An assistant was charged to remain with the patient, who was perfectly calm. About five hours after the excision, all the characteristic symptoms of hæmorrhage in the rectum were manifested; anxiety, rigors, inclination to vomit, cold perspirations, sinking of the pulse, convulsive contractions of the limbs, inexplicable agony, vertigo, syncope; tenesmus increasing the patient went to stool, and the expulsion of a considerable quantity of partly coagulated blood gave him visible relief. A cold enema was administered, as M. Dupuytren had directed in such cases; it was returned immediately, and replaced by another that was longer retained. Nevertheless, at the expiration of about an hour, the symptoms returned with increased intensity; they produced complete collapse. The patient requested a notary would be sent for, and hastened to arrange his affairs, prefering death, which he thought was inevitable, rather than submit to cauterization. Dr. Caillard and Dr. Marx took the responsibility upon themselves; they endeavored to tranquilize him; and it may readily be imagined that it was not very easy to cauterize under these circumstances.—With the aid of a *speculum*, the place from whence the blood flowed was easily found, and the effusion stopped by the application of a bent *cauterie en harricot*, heated to a white heat. The hæmorrhage ceased; the alarming symptoms were dissipated; the inflamation which results from cauterization, and the dysuria that usually accompanies it, yielded very soon to the use of cataplasms, enemata and baths; a wick was kept in the rectum; at the end of a few days the patient was perfectly cured.

Sixth observation.—Mr. Joseph Cur——, of Polish origin, a singer at Amsterdam, forty-eight years of age, for several years suffered great pain in expelling the fæcal matter. This difficulty was caused by the presence of internal hæmorrhoids, which altogether was about the size of a hen's egg, During the act of defecation they protuded,

and caused a very painful strangulation, which was very difficult to reduce.

These tumours were not accompanied by habitual nor periodical discharges, only when the patient had a constipation; the hardened excrements, occasioned by their pressure, an erosion that gave rise to a slight discharge of blood. Forced by his profession to long standing, and to exertions of the voice that augmented his disease, and his sufferings, he resolved to travel to Paris, in hopes of being cured. M. Dupuytren made him go into a *Maison de Sante*, where two days after he was operated on. The patient lay in a convenient posture; the tumours, three in number, being protuded, were immediately excised. What is remarkable in this case, is, notwithstanding the large volume of the tumours, the excision caused but a slight effusion of blood, and did not require the cautery. A year after his cure we had occasion to see this patient, when there was no failure in the success obtained with an astonishing promptitude. These observations we owe to the complaisance of Dr. Marx; we will in conclusion, add one communicated by our benevolent colleague, Dr. Palliard.

Seventh observation.—A man, about forty-seven years of age, of low stature and sanguine temperament, came to the Hotel-Dieu, to be treated for internal and external hæmorrhoids, with which he had been afflicted for fifteen years. These tumours were so painful that he could take but very little exercise, or run for any distance, without causing protusion of the internal hœmorrhoids, which became irritated immediately by the friction of the dress. Repeated inflammation caused a discharge, sometimes sanguine, sometimes purulent, sometimes both one and the other. The act of defecation was a continual torture to the unhappy patient. Should the fear of those accidents that may result from the excision induce us to leave the patient a prey to this disastrous infirmity? The frequent returns of inflammation of the hæmorrhoidal tubercles will bring on disorganization. Besides, it is almost certain that the sanguine and perulent discharges would undermine the patient's constitution, and the sufferings he would undergo would hasten this fatal termination. We did not hesitate; the operation was decided on, for the danger was not inevitable, whilst disorganization would produce certain death. The patient was prepared for the operation by every means likely to insure success. General bleeding was practised, in order to prevent the violence of the inflammation which usually follows the excision of hæmorhoids. A blister was applied to the arm, to prevent the danger which sometimes follows the too sudden suppression of a natural discharge. The patient was kept on low diet, and the day before the operation the intestinal canal was emptied by an aperient. A tumour, composed of seven or eight tubercles, brownish on the outside, but of a brighter color inside, encircled externally the verge of the rectum. When the patient was lying down, without making any effort, all the tubercles were grouped, so as to form a brownish rugged tumour, about the size of a large walnut. When, on the contrary, the patient contracted the abdominal muscles, or strained if at stool, the external tumours opened and exposed a second circular hæmorrhoid, also composed of seven or eight tu-

bercles, but of different color, for they were uniformly of a roseate colour, and covered in all their extent by the internal membrane of the rectum. After having pointed out these different circumstances, M. Dupuytren ordered the patient to lie down on his abdomen, and make efforts as if at stool. This caused the protusion of the internal hæmorrhoids, which were seized with a dissecting forceps, and each of the tubercles that composed it were excised. The same was done with the external tumour, and immediately after, a cautery heated to a white heat, was applied to the bleeding parts of the wound; some hours after, a small wick was introduced into the anus, and afterwards a cerate. He could retain them but a very short time. During the day he complained of transient cholic pains, (diet, diluting drink, &c.) The next day the cholic pains were more violent and more prolonged, the verge of the anus was tumefied and painful, the patient felt difficulty in voiding urine, feverish symptoms, (bled in the arm, diluting drink, &c.) The third, fourth, fifth and sixth days after the operation, the pains decreased, the urine was freely evacuated, and the feverish symptoms disappeared; the appetite returned, and he was allowed some aliments. The seventh day, as the patient had not been at stool from the day of the operation, an ounce of castor oil was administered to him, and some hours after the bowels were opened five or six stools occurred during the day, they were all accompanied by great pain at the anus, nevertheless, after each of them the patient felt considerable relief. The following day he went freely and naturally to stool, the cholic pains became less and less frequent, but the twelfth day they returned with violence, and were followed by diarrhœa, the cause of which was unknown, (mucilaginous drinks, &c.)—The next day he was in the same state, (treacle one ounce.) The fourteenth day the diarrhœa ceased, and with it the cholic pains, (rice gruel.) On the fifteenth day the patient was quite well. He was allowed a moderate portion of food, he was radically cured of the hæmorrhoids, and the anus remained free in whatever posture he placed himself; defecation caused no pain, and he quitted the hospital completely cured.

6. *Treatment of Prolapsus Ani*.—In prolapsus ani, produced by the invagination of the rectum or by the relaxation and projection of the mucous membrane of the rectum, the following treatment is recommended by Mr. Benjamin Phillips, in a communication in the *Medical Gazette* for December last, by which he states that he always effects a radical cure of the disease.

"The reduction having been accomplished, the patient is placed upon a bed; the pelvis is then raised by pillows, so as to make the buttocks the must elevated portion of the trunk; the thighs and the folds of the nates are then so far removed from each other as to enable us with facility to make any application in the vicinity of the anus. A cautery, heated to whiteness, is now placed in the hands of the operator; who makes, according to the gravity of the case, one, two, three or four applications of the cautery to the margin of the anus.

"The exact point to which the application should be made is dependent upon the gravity of the disease; if it be not of long standing nor

obstinate, the application should be made to the margin of the anus, but without implicating the mucous membrane; and the length of the eschar should be about half an inch: this should be the uniform length of the eschar.

"If the case be an aggravated one, the application must be made, not only upon the epidermis but also upon the mucous membrane.

"It must be borne in mind that the object of the operation is to produce such an eschar as will be followed by suppuration; for in the process of cicatrization, which follows suppuration, a fibrous tissue is generated, by which the anus will be so effectually contracted as to prevent the possibility of a recurrence of the disease; and it is upon the accomplishment of this effect that the cure almost entirely depends.

"I have found in every case that the stimulous produced by the application of the cautery has occasioned the developement in the submucous cellular, tissue of an irritation capable of producing a firm and permanent adhesion of the mucous membrane.

"In this operation if the iron be properly heated, the pain is inconsiderable. And here it must be recollected that the application upon the living body of an iron heated to whiteness, occasions much less pain than the application of one merely heated to redness, and that the latter occasions much less pain than a gray heat.

"No other dressing than a piece of dry lint is required, and this is retained between the folds of the nates, and removed only when the patient goes to stool; before it is replaced, the anus should be washed with warm water, by which any irritating matter will be removed—After the performance of the operations, the contractions of the sphincter, which have been excited by the application of the cautery, continue sometimes for three or four days.

"If any pain be felt for a short time after the application of the cautery, fomentations of warm water will generally remove it.

"I shall conclude this communication by detailing the particulars of two cases of this disease which occurred some months since: one in a spare man of sixty-two, the other in a child of three years. In the elder patient, in whom there was no hæmorrhoidal disease, the mucous membrane projected whenever he went to stool, and had done so during very many years. Occasionally difficulty was experienced in reducing it; and in consequence of this, on some occasions it had remained unreduced for many days.

"When I saw him, the prolapsus had existed for nearly four days; there was exhaled from it a fœted sanious discharge, and it was considerably tumefied. The pain which the patient experienced was very severe whenever the tumor came in contact with his linen, or with any other body. Before I could succeed in reducing it, thirty-six leeches were applied, and a constant fomentation with warm water had been employed for some time. After its reduction, the patient was placed in the position I have already described, and the cautery was applied to the anterior and lateral parts of the anus, including about two lines of the mucous membrane. Some pain was experienced for three or four hours; it was relieved by constant fomentation with warm water. The patient did not go to stool for three days after the operation, and

when he did, the membrane no longer protuded, neither has it done so to this day. The younger patient had suffered from prolapsus during five months; it occurred every time he went to stool. In this case only one cauterization was made, and that at the distance of a line and half from the mucous membrane.

"The following day when the child went to stool, no prolapsus occurred, neither has it since. The cicatrization was complete on the twentieth day."

8. *Treatment of Cholera by Cold, as Practised by* Dr. CASPAR, of Berlin.—Dr. Caspar was first led to employ cold externally in cholera from the advantage derived from it in the treatment of asphyxia from cold. Physicians originally treated such patients, as cholera has since been treated, by the application of heat; but this practice has long since yielded to friction with ice, snow, &c.

Cold affusions had been previously tried at St. Petersburgh, and at Riga, but stimulants had always been given internally at the same time. The result of this method not having answered the hopes which were entertained, it was abandoned. Dr. Caspar does not proceed in this manner. He advises the employment of cold in the boldest manner; and that inert medicines alone should be used in conjunction with this agent. His method is as follows:—the patient is to be placed in an empty bathing-tub, if his skin is dry and flabby; but if on the contrary, it is covered with a slight moisture, or a profuse clammy sweat, the bathing-tub is to be filled with water heated to 27 degrees of Reaumur, (92.75 Fahr.) just up to the navel of the patient.

An assistant on each side supports the patient, so as to keep his back from the sides of the bathing tub; then four or five buckets of iced water are thrown over his head, breast and back. The quantity of water for a child is from one to three buckets. In very severe cases there is no reaction; in cases less severe the patient sighs, and sometimes makes an effort to escape. The slight reaction which takes place in the commencement would astonish those who have not yet employed this theraputic agent. At a more advanced period the reaction becomes more sensible: this symptom is favorable.

Conjointly with these perpendicular affusions others are made in a horizontal direction, dashed from a certain distance, with as much force as possible upon the chest and stomach. Two buckets of very cold water are sufficient for this operation, half the quantity for a child.—The patient in the commencement exhibits but a very slight, and hardly any impression. The cold dashes ought to be administered as promptly as possible, and repeated according to the severity of the disease every two or four hours. Dr. Caspar says that he has often employed twenty of them in the space of two days or two days and a half; ordinarily ten or twelve will suffice.

After the affusion the patient is to be put to bed, and to be covered up to his neck with woollen blankets well warmed. Under these coverings cold compresses are to be applied over the whole of the chest, abdomen and back. It is indispensable to change them as soon as they

become warm. The author regards these compresses as the principal agent in his method, because they, according to him, cause a new reaction. In the commencement those who are severely affected are equally insensible to these applications, but a little later the reaction becomes visible. It should be regarded as a favorable sign when the patient complains of the cold. Dr. Caspar does not think that cold compresses ought to be applied to the breasts of women who are suckling.

The head is also to be covered with cold compresses. They should even be resorted to in cases of slight cholera when the effusions are not employed. No other treatment, according to this author, so surely prevents the typhoid fever. Besides he has remarked that typhus succeeds rather milder cholera, than that which shows itself in all its intensity.

Dr. Caspar causes the feet of cholera patients to be enveloped in woolen cloths steeped in warm water. As much as he is opposed to the apparatus for heating the trunk of the body, as vapour baths, &c. yet he advises that bottles filled with boiling water should be applied to the feet. Often he even orders the lower extremities up to the knees to be placed morning and evening in warm water, to which six ounces of sulphuric acid has been added.

The application of cold compresses should be continued night and day until the pulse re-appears, or from small and contracted becomes fuller.

Dr. Caspar also gives his patients cold spring water to drink, or if the patient prefers it, cold beer. He rejects entirely the use of warm drinks. He also administers cold water enemata, and considers them as particularly indicated when there is constipation, and when the movement of a fluid in the intestines can be felt on the application of the hand to the abdomen. It is then that this author orders one or two enemata each day, composed of equal parts of cold water and of vinegar, sometimes with the addition of a spoonful of kitchen salt. These enemata generally act very promptly, provided the patients, as is seen in old men, are not affected with a paralysis of the intestinal canal. Notwithstanding this, it must not be imagined that Dr. Casper employs cold in all cases, and in all the periods of cholera. On the contrary, he modifies it according to the individual cases, and the forms which this disease presents. With this view he indicates three principal varieties of cholera—1st, mild cholera, or that which has been called cholerine. 2d. Asiatic *febrile* cholera, in opposition to that cholera in which there is a complete absence of pulse; but the author himself admits the inaccuracy of this definition. The treatment which he applies to this form is that which we have described previously. He joins to that an emetic, if the patient exhibit signs of gastric embarrassment, but only in that case. 3d. Cholera *sine pulsu* or cholera asphyxia, that which demands at the first onset the bold use of the affusions and cold dashes.

By this treatment re-action is speedily induced. Then Dr. Caspar is accustomed to draw twelve or fourteen ounces of blood, or fewer if the symptoms of local congestion be less marked. The compresses of iced water are continued during this period only upon the head. He

prescribes besides, in the greater number of cases, calomel in conjunction with rhubarb: from three to four grains of calomel, with four grains of rhubarb, every hour in the case of adults. Dr. Casper has renounced completely the employment of stimulants even in the typhoid stage, during which he continues the affusions of cold water and compresses to the head.

Although Dr. Casper points out the method of treatment by cold as the most advantageous, he is far from thinking that it will effect a cure in the majority of cases; he admits that the greater number of cholera patients die whatever may be the treatment which is adopted. However, the following are the conclusions which he believes may be drawn from his observations upon the comparative use of cold and other remedial methods in cholera.

1st. The treatment by cold is suited to the nature of this disease, (Dr. Caspar regards cholera as consisting in a paralysis of the cutaneous system,) or if that pathology is not admitted, to all its most marked phenomena.

2d. When applied with circumspection, more patients are cured by it than by any other method.

3d. It produces a surprising amelioration in the most severe forms, and in the most serious periods of cholera, when no other medication has any effect.

4th. It more surely than any other method prevents the consecutive typhus.

5th. It suits itself more easily to the taste and wants of the patients than the stimulating method.

6th. In cases where death is inevitable, it prolongs life as long as possible.

7th. This method is simple, costing very little, and easy of application.

Dr. Casper has added to the exposition of this method, a great many cases which attest its success.

9. *Dr. Hancock on External Stimulants.*—In the London Medical and Surgical Journal, for September 15 and 22, there is a paper on the utility ef external stimulants in internal inflammations, of which we shall here take a brief notice. Dr. H. first makes some observations on the sensibilities of certain internal tissues, as of the mucous membrane of the stomach and bowels, and then proceeds to the consideration of cutaneous stimulation as offering a powerful means of arresting the progress of inflammation, "by deriving the blood and humors from internal congested parts, equalizing the circulation, restoring a mutual balance between the powers of the heart and the external capillaries, and so ultimately obtaining the desired resolution." While Dr. H. acknowledges the utility of blisters, he considers them, in severe cases, as very partial remedies, being too circumscribed in their operation. The more general application of friction to the skin with lime-juice and pepper, or vinegar and common salt, in cases of severe internal inflammation, is proposed by our author. The fol-

lowing extract, containing facts rather than arguments, we shall insert here, as it illustrates Dr. Hancock's views on the subject of external stimulation.

"The bird-pepper (capsicum frutescens) is the kind I have always used, it being more hot and pungent than the other kinds in general. A small handful should be well bruised in a mortar, so as to reduce the seeds and other parts to a fine powder or mass. The powder sold in the shops should not be trusted, it is shamefully sophisticated, like most other articles. Let the former be mixed with an equal quantity of table salt, and add a pint of lime-juice or good vinegar. With this composition the body is to be rubbed entirely over, until it shall produce a sufficient demonstration of excitement and pain.

In a case on Plantation Anna Regina, which I propose to annex to this paper, the patient was so far advanced as to be quite insensible to the stimulus until the second day of the application, and shewed no sensibility till after at least five or six repetitions of the process.

Another instance of the value of frictions with pepper and lime-juice, is that of a boy, George, belonging to Mr. Evans, one amongst several unexpected recoveries from violent inflammation, in which early bleeding had been neglected, or in which it had failed or proved insufficient, although accompanied by blisters and the usual treatment.

Several other instances occurred in my practice, giving further proofs of the efficacy of the pepper frictions in vehement inflammation of the lungs, as two at Exmouth, an African and a Creole, who had each a violent attack of peripneumony about the same time, and in both whom a relapse occurred, or an aggravation of symptoms from exposure to air, by opening the windows of their apartments during bad weather.

The effects of the remedy were most strikingly manifested on the Creole, Billy. My attendance was required at 9 p. m. when I found him laboring under an excessive aggravation of his disorder, with difficult respiration, cough, anxiety, hot dry skin, and small jerking pulse.* The frictions had been used some days previously, but were discontinued, owing to the great and decided relief they had afforded. I stood by, and assisted in performing the operation effectually by smart frictions over the whole body, with a small handful of capsicum, bruised down with some table salt and lime-juice (we used no weights or measures for this composition.) He said it burnt his skin very much, but most readily submitted, however, as he knew, he said, it would help him, as it had done some days before. On the following day he told me he had not slept much from the burning of the skin, but felt quite relieved of the inward pain. His skin was moist, pulse soft, expectoration free, and he experienced no difficulty in breathing. The application was afterwards repeated a few times more moderately. He had no further symptoms of complaint of the chest, except cough and expectoration, which gradually declined; but the severity of the disease had been such as to cause a serous effusion or anasarcous swelling

* Tongue not dry, however, as in the case of Benjamin, at Sparta.

at the feet, and puffed belly, for which we directed bark, wine, and gentle exercise, and he recovered.

Soon after this, the man named Gilbert, also of Exmouth, was taken with the same complaint, (a very severe peripneumony,) but shortly recovered under the same *regimen*, which the sick nurse said caused him to perspire very freely; and indeed I always found it wonderfully to remove the constriction of the skin in cases where bleeding was inadmissible, and when all hope from this, or other means were gone by.

The man Mars, on the same estate, recovered from pneumonia under the same remedy, the year ensuing, and that from an almost hopeless condition. Another case of the same kind, Richard, at Hampton court, rapidly recovered from a severe attack of peripneumony, under the use of the pepper frictions. I was absent, and the hospital attendants commenced it of their own accord, on the second and third day of the disease, as from having seen its benefits in so many previous cases, they considered it a certain remedy. This was stated to me by Mr. M'Lenan, a very careful and excellent young man who superintended the sick-house.

I must not fail to note here a previous case in a Creole boy, called Wellington, on the same estate, in a vehement attack of pleurisy. He came into the Hospital and was bled twice the same day, and was blistered on the next, with a smaller bleeding, and blister repeated, and glysters, nitre, and antimony, from the first, with barley-water, &c. On the third day his respiration was difficult and painful; the fever and all the symptoms were greatly aggravated; his appearance was ghastly, his tongue dry, and he swooned on sitting up in bed. This afternoon I directed frictions with bruised pepper (capsicum frutescens), and the lime-juice.* It was faithfully executed by the sick-nurse, who followed up this idea, had withal bound up his feet, legs, and arms, with the same composition, as a cataplasm. I found him now to my surprise, sitting up and free from complaint, with composed, easy respiration, and no fever and saying he felt no pain. The sick-nurse said he appeared to derive sensible relief at about eleven o'clock the preceding night, the hour in which the fever and other symptoms had been aggravated on each preceding night.

In this case I remarked that the sick-nurse seized the idea, and commenced the process with alacrity, owing to her having witnessed its success in two former similar cases of forlorn hope, in which I had prescribed the pepper friction, and in each of which it was applied over the whole body, and often repeated. I accordingly found powdered pepper now sticking all over the boy's skin. And I was told that he complained of nothing from this time but hunger and the heat of the pepper. Such an early, sudden, and decisive resolution is not

*Lime or lemon juice, being ever at hand, was commonly employed; but good vinegar is fully equivalent, and is free from the unpleasant clamminess resulting from lime-juice and salt. I am told this practice has been verified by two eminent and skilful physicians of Essequebo, Drs. Bell and Buchanan.

to be expected from the use of the common remedies, even with the best efforts of nature.

A still more surprizing recovery was effected last year (1824) by the same means, in the boy called Christmas, at Anna Regina. This lad, (about fifteen years of age,) recovered from the most hopeless state of inflammation which I ever knew, or which it is possible to conceive one to escape from. The patient was in the latter stage of measles, and the inflammation of the pulmonary organs was in this case, so excessive that the patient could scarcely breathe, and was nearly suffocated; had constant fever, dry skin, parched tongue, and such a metastasis on the brain as rendered him delirious and perfectly insensible for about two days. Both the pulse and respiration were nearly extinct. His eye was glassy, and covered with a film; his appearance, in short, was most cadaverous; he was totally unable to swallow, and the *raucum* or rattle in the throat, withal announced a speedy dissolution.

Mr. Gordon, the hospital attendant, observing that I had omitted this patient in the prescription-book, inquired if any attempt should be made to give him any thing, as cold water, his mouth being dry and parched. I told him, that would only add to his distress by impeding respiration, as we had just witnessed, that nothing could possibly be of any avail; but if he pleased he could try the rubbing with pepper and lime-juice. Having seen its effects at Hampton Court, he commenced instantly (having two assistants employed), and diligently repeating it over the whole body. The patient was entirely insensible to its stimulus until many applications had been made, but the following day he began to shew signs of pain, and soon afterwards he spoke, and complained of the smarting *over all his skin.* From this period the fever abated, the tongue became moist, and perspiration ensued. On visiting him the next day, he was sensible, and raised himself in bed, and said he must have some soup and wine, which were instantly brought him; he actually appeared like one risen from the grave. The fever and all other signs of inflammation had vanished; he complained of no pain; coughed, with a copious expectoration, which at first was dark and fœtid. The rubbing was still repeated two or three times a day, and, although reduced almost to a skeleton, his recovery was rapid and perfect. Mr. Frost, the manager, and Mr. Gordon and others, can attest the truth of this extraordinary recovery. It was, however, only by the most diligent and persevering application of the remedy that the patient was saved.

Soon after this, George, a servant of Mr. Evans, in a desperate peripneumony, recovered under the same treatment. Bleeding and various medicines had been used without effect; both the nurse and patient scouted all other remedies, and boldly asserted that nothing but the rubbing saved him. I was called away for some days, but learned on my return, that in this case, as in the others I had witnessed, the free expectoration and perspiration came on, and fever abated, together with freedom of respiration and cessation of pain, in a short time after the frictions were commenced. The patient also soon acquired a remarkable craving for food.

Another most striking case occurred on Sparta estate. The man Benjamin was attacked with pleurisy, or rather peripneumony. He was bled four or five times during the first four days with blisters and the usual remedies. On the fourth evening, finding him much worse, with dry tongue, great pain in the chest, suffocating breathing, and all the symptoms pointing to a speedy termination, the pepper frictions being resolved on as the only hope remaining, were promptly applied and repeated several times during the night. He took nothing but barley-water, with a little nitre and an opiate pill. On the morning following he was quite tranquil; the tongue was moist, heat gone, and skin soft and moist. Mr. Campbell saw him well rubbed again yesterday (Oct, 14). He is now out of danger.

I have passed unnoticed many other cases of less importance, or of less severity.

In similar cases, when remedial treatment can be applied early, the lancet should be employed, and the usual auxiliaries as laxatives, antimonials, diluents, blisters, &c. We ought not to fritter the time and life of a patient under the use of single remedies, as when a formidable enemy is within the walls, we should not put forward a force in single file to repel his approach, and thus trifle till he gets possession of the castle. Yet, how common is it in physic to trust, as we may say, to a single picquet guard, until the breach has become irreparable.

In fine, I have found the above practice most effectual and decisive, altogether, I may say, without a parallel, not having been disappointed in a single instance; and it has been to me a source of high gratification to see patients brought round, under its use, from the most desperate conditions, and such as I had ever before considered to be utterly past recovery."

10. ***Clinical observations on the Exhibition of Opium in large Doses, in certain Cases of Disease.*** By Dr. W. Stokes, *Physician to the Meath Hospital, Dublin.*—In the second number of our Dublin contemporary there is a paper by Dr. Stokes, on the effects of opium in inflammatory diseases, which deserves notice. Various practitioners in hot climates have demonstrated the utility of opium in conjunction with other remedies, in subduing inflammatory affections, as dysentary, hepatitis, and fever; while Hamilton, Armstrong, and many others have done the same in this country. Dr. Armstrong, indeed, and the late Mr. Hayden, proposed opium *alone* in abdominal phlegmasiæ—and Dr. Stokes appears to follow in the same track.

"The first form of disease in which the use of opium appears peculiarly advantageous, may be stated to be that of *Peritonitis occurring under circumstances where bloodletting cannot be employed.* Now, the following are the circumstances under which I have seen this condition of parts to arise:—

1st.—Peritonitis arising from the escape of fæcal matters into the peritoneal cavity, through a perforating ulcer of the intestine.

2nd.—Peritonitis arising from the bursting of an abscess into the serous cavity.

3d.—Peritonitis occurring after the operation of paracentesis in debilitated subjects.

In addition to these cases which I have myself witnessed, we may add, that low typhoid peritonitis, occurring after delivery, as described by Drs. Cusack and Gooch; and the peritonitis which results from rupture of the intestine, induced by external violence."

There can scarcely be a more appalling accident than perforation of the intestine, and escape of its contents, among the bowels, with the rapid and dreadful peritonitis that ensues. As this accident generally supervenes on a wasting disease, as intestinal or typhoid fever, there is nothing to be gained by bleeding, as the disease runs a rapid course, and prostration of strength exists from the very beginning. We have, then, two indications (according to our author) to pursue—first, to support the strength of the patient;—secondly, to prevent the further effusion into the peritoneal cavity, so that nature may have time and opportunity to surround what has already been extravasated, by boundaries of coagulable lymph. Opium in large doses, is the remedy on which our author depends. Two cases are condensed from the fifth volume of the Dublin Hospital Reports, in one of which great relief was obtained, but the advantage was lost by exhibiting an aperient too soon, when all the bad symptoms recurred, and the patient died. The next case was more successful, and our readers will find it quoted in No XXVIII. of this Journal, page 541. There can be little doubt that, in the case alluded to, there was perforation of the intestine, with consequent extravasation of its contents. The power of bearing opium, (which in this case was given to a great extent) without injury to the nervous system, is very remarkable, and is only explicable by the *pain*, on which the anodyne effects of the opium appear to be expended.

Since the occurrence of these cases, our author has used the same remedy in examples of ordinary peritonitis, where bleeding was inadmissible; and he assures us that he has had no reason to change his high opinion of its powers. In one case where death took place, the opium was borne without the slightest inconvenience. In two cases lately occurring in the hospital, the same treatment has been pursued with the most striking benefit. A case is quoted from the Dublin Hospital Reports, of hepatic abscess, in which the practice here recommended was first tried.

"I have now detailed cases illustrative of the utility of opium in large doses in peritonitis, arising from the introduction of fæcal and of purulent matter into the serous cavity. I would further propose it as a remedy in cases of rupture of the bladder and uterus, and in peritonitis after the operation for strangulated hernia. I am at present trying its powers in a case of recent pneumothorax from pulmonary fistula. In two cases of peritonitis after tapping, where the patients were in a low state previous to the operation, the exhibition of these large doses of opium, without drawing, any blood generally or locally, has succeeded in my hands in removing the disease and saving the life of the patient. This appears to be a peculiarly appropriate case for the opi-

um treatment. The patients are generally cachectic, either from original constitution or the disease. They almost all labor under visceral disease and obstruction, and a state of collapse commonly follows the operation. All these circumstances go strongly against our use of the usual antiphlogistic treatment; it was in a case of this kind which occurred in the old Meath Hospital, in the year 1822, that Dr. Graves first ascertained the great importance of opium in this disease. A woman had labored under ascites, for which she was tapped; the operation was followed by the symptoms of peritonitis. When Dr. Graves saw her, she appeared in the last stage of the disease, she had constant vomiting, hippocratic countenance, cold extremities, the belly exquisitely tender, and the pulse 160 in the minute, and nearly imperceptible. The case appearing hopeless, Dr. Graves determined on merely endeavoring to allay the distressing symptom of vomiting, and admininistered a drachm of laudanum. The patient soon after fell asleep, and awoke refreshed, with a more warm surface and fuller pulse. The vomiting had ceased. The same remedy was used in smaller doses every fourth hour, and in the course of two days all the unpleasant symptoms had disappeared.

I now proceed to submit some cases of diseases of mucous membranes, where the use of opium has proved efficacious from having witnessed its utility in cases of inflammatory states of the serous membranes, where the inflammation might be termed, for want of a better name, *asthenic;* it appeared probable, that the same condition of mucous membranes might be benefitted by it.

It is now some months since I was called to see a gentleman laboring under all the symptoms of gastro-enteritis, in a severe form. He had considerable fever; thirst urgent; constant smaking of the lips; respiration hurried, *without disease of the respiratory system;* a red tongue, and a great tenderness of the belly. The usual treatment was pursued, but the disease showed great obstinacy, and after six weeks continuance the situation of the patient appeared hopeless. At this time a violent bronchitis supervened, and so great were the sufferings of the patient from the accumulation of mucus in the trachea, that on three occasions I left him, never expecting to see him again. It was remarkable, that during this attack, the symptoms of abdominal disease greatly subsided. Under a stimulating treatment he recovered from the bronchitis, only to relapse into his former state. The abdominal symptoms now became still more urgent; the belly swelled from tympanitis; the verge of the anus became surrounded by large and irritable hæmorrhoids; there was extraordinary prostration and constant low delirium. Under these circumstances, a diarrhœa supervened, at first slight, but afterwards so severe as to threaten every day death from exhaustion. A great variety of means were tried, but without avail. At this time, when the patient seemed in articulo mortis, I ordered him a grain of opium every hour; this he took regularly for the first twelve hours, *without any inconvenience,* and he experienced some refreshing sleep. Next day, the remedy was continued in the same dose every second hour, and from this time his im-

provement was rapid; and I rejoice to say, that he is now in the enjoyment of good health."

This was a fair case, Dr. S. observes, for the employment of this *heroic* remedy, since all other means had failed. The next case is one to which he confesses he cannot but look back on with pleasure, was that of a patient who was admitted in February into the Meath Hospital, complaining of sore throat and shooting pain through both ears. His countenance was haggard—voice raucous—body emaciated.

"An extensive and unhealthy-looking ulcer, covered with a whitish matter, was found to occupy the left tonsil, the back of the pharynx, and left side of the uvula. The patient denied having had venereal, but circumstances led us to suspect this; he had, however, been frequently salivated in India, for abdominal disease and fevers. He first felt the soreness of his throat six weeks before admission, which was the time when his vessel made the British Channel. We ordered the patient the sarsaparilla decoction with nitro-muriatic acid, and touched the sore with a strong solution of nitrate of silver, which caustic was changed in some days for the butter of antimony. No good effect was produced by these means; the soreness extended quite round the uvula, which it rapidly destroyed. The breath became fætid; the cough laryngeal; the patient's appearance was still worse than on admission; his nights were sleepless, and he complained much of pain in the head.

I now changed the plan of treatment, omitted the sarsaparilla and the lotion, and ordered a gargle of chloride of lime with the internal use of six grains of opium daily, and an increase of his wine. At once the sore began to assume a more healthy appearance; the fætor of breath diminished greatly, and in a few days wholly disappeared. After a short time, in consequence of want of sleep, we increased the dose to eight grains, on which he has been kept since the 20th of February. The sore is now healed, and the whole state of the patient singularly improved."

At the time of writing, there was in the Meath Hospital, a woman, who, for an enteritis, had taken 18 grains of opium in 48 hours. Previous to the exhibition of opium there had been retention of urine, which gave way under the administration of the remedy.

"Hitherto I have alluded to the employment either of simple opium or its tinctures. In Dr. Bardsley's interesting collection of Medical Observations, several cases are detailed, where in affections of the stomach, the acetate of morphia was employed with benefit. I am persuaded that it is a remedy of great power, particularly in chronic cases of dyspepsia, where there is much acidity. I was consulted some months back by a gentleman who has led a very dissipated life, and who for the last ten years has been a martyr to the worst symptoms of dyspepsia. About two years ago, he had a violent attack of hæmatemetis, and latterly the stomach had become so irritable, that it was scarcely possible to find any article of diet to agree with him. His sufferings were dreadful. After trying other means ineffectually, I ordered the 1-8th of a grain of acetate twice a day. He took the

remedy three times in the day, with the most perfect relief. The secretion of acid which had been enormous, was suddenly checked, and the patient in two days declared that he had felt better than he had done at any time for the last ten years. His appetite was good, and he foolishly indulged in articles of diet from which he had long abstained. On the fourth day, while in the highest spirits, he became pale; fell, and threw up several pounds of blood. The remedy was of course omitted. In about a fortnight, all the former unpleasant symptoms returned, and his indigestion was as complete as ever. I now ventured on exhibiting the morphia again, but in the doses of the 1-16th of a grain, twice in the day. This diminished dose again produced the same improvement, but in a few days was followed by a return of the hæmatesmetis.

The next case is one of a gentleman who has been for a length of time in the East Indies, and who has become a victim to hepatic disease. He is subject to attacks of pain in the epigastrium, followed by jaundice and fever. These have been treated by leeching, purgatives, and the use of mercury; but during the last attack, his debility was so great, that I did not wish to venture on this treatment. The acetate of morphia was given twice a day. It was commenced on the 26th December, and continued till the 18th February. The greatest improvement has been made in this gentleman's state. The pain has disappeared; there is now no tenderness; the jaundice has subsided, and what is most remarkable, his bowels now act regularly without the assistance of medicine. He has gained flesh, and his whole appearance is singularly improved."

We have now only to append the conclusions to which our author has come relative to the exhibition of opium.

"1st. That in certain cases of inflammation of serous and mucous membranes, where depletion by bloodletting or other antiphlogistic measures are inadmissible, and the system in a state of collapse, the exhibition of opium has a powerful effect in controlling the disease.

2d. That under these circumstances the remedy may be given in very large doses, with great benefit and safety.

3rd. That this effect then is to raise the powers of life, and remove the local disease.

4th. That the poisonous effects of opium are rarely observed in these cases; the collapse and debility of the patient appearing to cause a tolerance of the remedy.

5th. The cases in which the utility of this practice has been ascertained, are as follow:—

Simple peritonitis, in a stage where bleeding cannot be performed. Low puerperal peritonitis. Peritonitis from perforation of the intestine; from the opening of an abscess into the sac; or lastly; after the operation of paracentesis in debilitated subjects. Violent diarrhæa, supervening in an exhausted subject. Phagedenic ulceration of the throat, in a similar individual. And cases of chronic gastritis, and gastro-duodenitis in patients exhausted by the long continuance of the disease.

6th. The cases in which this mode of treatment would be probably useful are—peritonitis from rupture of the bladder, or uterus, traumatic rupture of the intestine, or after the operation for strangulated hernia.

The last observation which I shall make here is, that in most of these cases, particularly in those of diseases of serous membranes, wine was given in conjunction with the opium, and in all, the patients were supported by a lightly nutritious diet."

This paper is certainly interesting, and the subject important. On this account we have laid a full account of it before our readers.—*Medico-Chirurg. Review.*

11. *Dr. Broussais' Opinion on the Use of large Doses of Tartar-Emetic in Pneumonia.*—The employment of this agent in acute inflammation of the lungs is most efficacious, when the patients have been weakened beforehand sufficiently by bleedings. We are more and more satisfied that it acts, not as a specific in counteracting inflammatory excitement, but altogether as a revulsive, or, in other words, that the relief to the lungs is always in proportion to the rapidity and to the quantity of discharges produced, whether by vomiting, purging, sweating, or flow of urine. It is quite a mistaken notion to suppose that the amendment of a patient begins only when the antimonial ceases to have some sensible effect, or, as it is expressed, when a "tolerance" of the drug is induced. When it checks an inflammation, without causing vomiting or purging, we shall find that profuse sweating or diuresis has generally taken place. But should no evacuation at all occur, the antimonial becomes an irritant to the stomach, and gastritis ensues. Dr B. has seen this repeatedly take place, and therefore, dissuades its employment, whenever there are any symptoms of tenderness of the stomach, whether this be primary or consecutive. He narrates the following case. A soldier entered the "Hospital du Val de Grace," having all the symptoms of an acute pneumonia of both lungs, with a hypertrophy of the heart. He was bled largely and repeatedly, but did not experience relief; indeed the symptoms were aggravated, and the antimonial solution was ordered to be taken every hour. It produced copious purging, but the disease advanced rapidly to a fatal termination.

On dissection, the greater part of the lungs was perfectly normal, congestion being visible only in one part. On an examination of the stomach, its mucous coat was found intensely inflamed, and the inflammation was traced to have extended along the whole extent of the duodenum, as far as one-half of the track of the ileum. The inner surface was much softened, and in patches converted into the appearance of a boiled pulp. In short, this patient, says Dr. Broussais, died, not from a pneumonia, but from an intense gastro-enteritis.—*Anal. de la Médéc Physiol.*

Obs. by Ed. The above report appears to us to be exceedingly imperfect and ill drawn up, and does not do much credit to the enlightened physician, as no accurate diagnosis of the transference of the malady seems to have been made before death—*Medico-Chirurg. Rev.*

12. *Cholera, Great Variety in the Treatment of, in Paris.*—We have regretted that we have not noted down each and every mode and method which has been recommended in this country; it would form a document at once curious and instructive, at least so far as in shewing us, how the monster has laughed to scorn all the futile attempts to arrest its fury; and how frail and feeble are the grounds on which the practice of medicine, in the hands of many, is founded. No one, we think, will dispute with us, that the only rational hope of successfully treating this, or any other disease, is by a comprehensive and philosophical scrutiny of its physiology or symptoms during life, and of its pathology, or its appearances after death. We must not look to one, or to another of these singly, but group them together, and cautiously endeavor to trace every link of the chain; it is only thus that we can expect to arrive at any rational conjectures as to the causes and essence of the disease; and till then, the treatment must necessarily be empirical, and on the whole, perhaps as inefficacious, nay, even decidedly hurtful, as beneficial. If, in any future period, a method of cure, at once successful and generally applicable, be discovered, we, or our successors, must look back to the records of this disease, with feelings of little respect for the soundness and sagacity of the present race of medical men; for we have all along permitted ourselves to be too much carried along by an exclusive or undue attention to one particular phenomenon, and on that, as on a pivot, we have made our practice turn; but it is never too late to be wise, and our wisdom will be best displayed, by endeavoring to draw some useful lessons from the blundering errors we have hitherto committed. Some idea may be formed of the malapraxis of the French Physicians, from the following report of the different plans of treatment of the cholera in the various Parisian hospitals.

Hop. Necker.—M. Bricheteau. Vapour baths, aromatic infusions—general and local bleedings, sinapisms and stimulating embrocations—wine, æther, and cordials—emetics, cold lemonade, iced water, effervescing draughts, ice laid on the epigastrium, opiate, enemas, opium pills by the mouth. In less severe cases, energetic antiphlogistic treatment.

Hop. Orphelius—M. Blane.—Bleeding, emetics, effervescing draughts, purgatives, and then astringents, if the purging is obstinate—iced drinks.

Hop. Piepus—M. Patrix. Fumigation with chlorine—bleeding, emetics—narcotic decoction—iced lemonade—blisters on each hypochondrium.

Hop. St. Antoine.—M. Mailly. Leeches to the anus and epigastrium—venesection, antispasmodic and opiate drinks—stimulating frictions—infusion of peppermint, with acet. ammoniæ.

Hop. St. Louis—M. Biett. Subnitras hydrargiri, charcoal, in doses 1-2 drachm every hour.

M. Lugol. External warmth—æther, with laudanum and acet. ammoniæ—pills of acetas morphiæ. For drink, strong tea, well sugared, acidulated, and alcoholised! against the vomitings, seltzer water, either alone or with wine.

M. Gerdy. General stimulating frictions—blisters along the spine—sinapisms to the arms, legs, and epigastrium—gaseous laudanised potion—pills of camphor.

M. Jobert. Sinapisms along the whole extent of all the limbs—laudanum—leeches to the anus. When vomiting is obstinate, seltzer water, or the withdrawal of all drinks.

Hop. Salpetriere.—M. Piorry.—General or local bleeding—hot aromatic infusion—Malaga wine or light punch during the collapse—iced water, and when re-action ensues, leeches, poultices, and gum drinks.

Hop. Pitité. Fresh lemonade or warm tea—peppermint and laudanum, opiate enemata. M. Andral employs ipecacuan emetics—excitants during the cold stage—local and general bleedings during reaction—opium in small doses.

M. Lisfranc. Tea, lemonade, and punch—enemata, with sulphate of quinine—sinapisms and stimulating frictions.

M. Velpeau. Sinapisms, opiates, quinine, enemata, to which are added laudanum and camphor.

M. Bouillaud. Bleeding, leeches to abdomen, frequently repeated—iced lemonade. In the state of complete collapse, weak coffee, as a drink, and drawing a heated iron along a flannel band, which has been well soaked in equal parts of liquor ammoniæ and spir. tereb. and applied over the whole length of the spine.

Val de Grace—M. Broussais. When there is profuse vomiting and purging, the patient should be given ice alone to swallow: when the state of cyanosis ceases, we ought to substitute drinks. No frictions should be employed. General bleeding, or, what is better, numerous leeches, and afterwards hot poultices to the leech-bites—sinapisms—vapor-baths—leeches and iced water to the head.—*Journ. Complement.*

The simple treatment of Broussais coincides nearly with the cold-water practice in this country.—*Medico-Chirurg. Rev.*

II. ANALYTICAL.

1. *Chemical and Medicinal Qualities of the Apocynum Cannabinum.*—Professor Griscom, of New-York, in a well written paper, inserted in the 33d No. of the American Journal, has presented to the profession as a new and valuable medicine, the *Apocynum Cannabinum*, or Indian hemp, one of our common plants. The bark of the root is most abundant in active matter, which is chiefly soluble in water. It may be administered

in decoction, in tincture, or in substance, but he prefers the first mode.

"The Indian hemp, when taken internally, appears to have four different and distinct operations upon the system:—1st. As an emetic. 2d. As a purgative. 3d. As a sudorific. 4th. As a diuretic. Each of these effects it produces almost invariably. Its first operation, when taken into the stomach is that of producing nausea, if given in sufficient quantity, (which need not be large,) and if this is increased, vomiting will be the result. It very soon evinces its action upon the peristaltic motions of the prima viæ, by producing copious feculent and watery discharges, particularly the latter, which action, when once excited, is very easily continued, by the occasional administration of a wine-glassful of the decoction. The next operation of this remedy is upon the skin, where it displays its sudorific properties often in a very remarkable manner. Copious perspiration almost invariably follows its exhibition, to which effect is, in a great measure, attributed by some, the powerful influence it exercises over the various forms of dropsy. The activity of its diuretic properties does not appear to be so great in many instances as in others. In the first three or four cases related, the urinary secretion, although somewhat increased in quantity, was not such as to be commensurate with the effect produced upon the disease by the exhibition of the medicine. In other instances its diuretic operation has been more manifest, causing very profuse discharges of urine, and in a very short time relieving the overloaded tissues of their burden.

Dropsy is, I believe, the only morbid affection for the relief of which the powers of this plant have been brought into successful requisition. Its very active, and often violent operation would seem, in a great measure to preclude its use in diseases which are accompanied with much febrile excitement. Yet one might readily suppose that some of its particular properties might be very advantageously sought for in some diseases where much arterial excitement was not present—especially its emetic, sudorific, or cathartic properties, each of which operations might probably be separately obtained by giving it in well regulated doses."

2. *Medicinal Properties of the Euphorbia Corollata.*—This also is one of our common plants, known by the names of milk-weed, snake's milk, ipecac and Indian physic—epithets, which, however, are applied by the people to other plants of this country. It grows in cultivated fields. Dr. Zollikoffer, who is known to the profession by his researches in our Medical Botany, has published in the same Journal, a paper on its pharmaceutic and medical qualities, from which we make the following extract:

"*Pharmaceutic preparations.*—The vin. Euphorbiæ, and the pulvis corollatæ compositus. The former preparation I have made in the following way:—R. Radicis Euphorbiæ corollatæ, oz.i; vini albi hispanæ, octarius unus. dosis dr.ii. ad oz.ss.; emesis provocandi. The latter formulæ is in imitation of the pulvis ipecacuanhæ compositus, and doses not differ in the proportions, except in substituting the corollata in the place of the ipecacuanha. Both of these preparations are as prompt and effectual as remedial agents.

Medical uses.—This vegetable is emetic, diaphoretic, expectorant and epitastic. As an emetic it is mild and certain in its operation, rarely occasioning pain or spasms, and exciting little previous nausea or giddiness; possessing an advantage over some other remedies of this class, that when it does not prove emetic, it passes off by the bowels. The dose of the powdered root that is required to excite emesis, is from fifteen to twenty grains. This substance is better calculated to effect certain indications, than the more nauseating articles belonging to this class of remedies; and as the judicious practitioner, in the selection of an emetic, will always be guided by the nature of an indication which he intends to fulfil, if his object be to evacuate the stomach quickly and completely, he will avoid those emetics that are distinguished by their nauseating tendency, as in cases of disease which depend on a disordered state of the stomach, in connexion with undue distention, and the presence of acrid and indigestible matter: if, on the other hand, his intention be to influence some remote organ through the sympathetic powers of the stomach, an emetic of an opposite tendency may be better calculated to answer such indications, inasmuch as the nausea which they induce, greatly lessens the force of the circulation; and as the energy of absorption is generally in an increase ratio to that of the circulation, we frequently obtain from nauseating emetics considerable assistance in the treatment of different dropsical affections. The corollata is only calculated to effect the indications which are accomplished by the primary peoration of emetics, for whenever our object is to evacuate the stomach, and prevent absorption, we must take care to cut short the nauseating stage, (by such articles as produce little or none of this effect,) a precaution which is highly important in the management of cases in which poisonous substances have been taken into the stomach. My object at present is not to discuss the operation of emetics and the diversified affections in which they are not unfrequently competent to the production of the most satisfactory results, for this to me would appear to be foreign to the contemplated intention I am desirous of fulfilling by the communication of this paper. What I have said is merely intended to show the applicability of this plant to particular cases. When it is administered with the view of obtaining its diaphoretic operation, the quantity exhibited at each dose should not exceed four grains, and this proportion should be given every three hours. The pulvis corollatæ compositus may very frequently be used, particularly when a stimulant diaphoretic is indicated; for from the operation of this compound remedial agent, it would seem, that whilst the opium increases the force of the circulation, the corollata relaxes the exhalant vessels,

and consequently induces a copious diaphoresis. The action of each of these articles would appear to be mutually lost, and converted into a powerful diaphoretic, thus affording a very beautiful illustration of the combination of medicines which excite different actions on the stomach and system, in consequence of which new or modified results are produced. The dose of this combination is the same of that of the Dover's powder. The expectorant operation of this plant may be procured in the dose of three grains, occasionally exhibited in a little honey, sugar and water, or any other suitable vehicle. In relation to its epispastic property, I would remark, that it possesses an advantage over the ointment prepared with the antimonium tartarizatum, in producing a beautiful display of pustules in twelve or fifteen hours after its application, which passes off in two or three days, without occasioning the least inconvenience whatever to the patient. The root in its recent state is merely to be applied contused to any part of the body, and permitted to remain a few minutes only, when a sufficient quantity of the lactescent matter will remain to produce the intended effect. A continuation of the pustular eruption may be kept up, by making an application of the contused root every forty-eight hours. It is the only vegetable substance that is entitled to attention on the account of the property it possesses of exciting an action on the surface in this way; and the only one that is calculated to answer the same purposes of the tartar emetic ointment."

3. *Spontaneous Poisonous Changes in Bread and Meat.*—M. CHEVALLIER has published a paper in the *Journ. de Chem. Med.* on certain changes which bread and meat, long kept, are apt to undergo, by which they are rendered poisonous. The following case occurred in the practice of M. Bricheteau, in August, 1831. A woman, aged about 40, purchased of a pork butcher and eat through the day, some slices of bacon. In the evening M. Bricheteau found that she had been vomiting for several hours.

"The abdomen was excessively tender. She had frequent stools, with tenesmus, and she complained of general pain. Cataplasms were applied to the abdomen, and she was ordered lavements, diluent drinks, and absolute diet. Notwithstanding this treatment, the patient had that night above fifty stools, and the abdominal pains continued very severe. Leeches were consequently applied, a warm bath ordered, and the previous treatment continued. In two days the patient recovered. These symptoms at such a time might have readily been attributed to other causes, had not a young woman, who had eaten a very small morsel of the same meat, experienced analagous accidents. And it further appeared that a third person had been very ill after eating pork purchased at the same time and place.

On the 30th of May, 1832, we were directed to institute an official inquiry re pecting an occurrence of the same nature, and which gave rise to the subjoined report:"

In May, 1832, a similar accident happened to another family, apparently from a like cause. A commission, consisting of MM. Durocher, Geeury and Chevallier, was directed to inquire into the circumstances of the case. The following is the result of their inquiry:

"*Examination of the Meat.*—The meat, a part of which had occasioned the illness of the female, was composed of several pieces cut from a lump of a preparation known in the pork trade by the name of *Italian cheese*, made of mixed fragments, strongly seasoned, and converted into a kind of compact pie, which is sold in slices. The pieces we examined were covered, some with blue, and others with green mould, the latter circumstance occasioning a copery appearance. Having divided a portion into three parts, one was treated with distilled water, and the solution tested by reagents, which proved the absence of any poisonous metal. Another part was treated with distilled water acidulated with nitric acid; the solution thus obtained was evaporated, the residuum redissolved in water, and tested by reagents, which, as before, gave no indication of any known poison. The last part of the meat was introduced into a new crucible, carbonized and incinerated. The ashes did not contain the least traces of copper. The same experiments repeated on the meat found at the shop of the Sieur L., were attended with the same negative results. From these facts it follows that the meat in question contained no copper, but that it had undergone a marked alteration capable of producing the accidents in question; nor is this the first example of poisoning by this particular substance. Dr. Paulus, of Saltz, has already related the history of seven persons who became violently ill after eating *Italian cheese*, and of whom three died. In 1824, a family named Plagneard, at Paris, were also very dangerously affected after partakinn of a ham pie which contained no metallic poison, but in which the alteration in question had commenced."

In the London Lancet, is contained an account of a case of poisoning by mouldy bread. It occurred in the family of the beadle of the parish of Hammersmith, Eng.

"His wife purchased in the morning a loaf of bread, of which she ate a slice at breakfast. Her son, 20 years of age, ate two slices of the same bread toasted; almost immediately after the meal, both became unwell, and diarrhœa, vomiting, and tenderness of the abdomen supervened, and several hours elapsed before these symptoms abated. The loaf, a considerable portion of which we obtained, was of yellowish

color, though baked that morning, and heated for the ordinary length of time. It was sprinkled over with minute fungiform vegetations, the greater number of which were black, a few green, and several yellow. It was soft, wet, inelastic, and so tough that it could be drawn into strings. Its taste was unpleasant, its smell acrid, and it reddened litmus paper when laid upon it."

The mould, collected and eaten separately, was found to be innoxious. It was ascertained by various experiments, that no mineral poison was present.

"On analysis of the bread, it was found to contain the due proportion of starch, amidine, sugar, and earthy substances, but the gluten had undergone a marked alteration in its proportions."

III. ORIGINAL.

The Western Journal,

E Sylvis, acque atque ad Sylvas nuncius.

Cincinnati, June 30, 1833.

I. Our Enterprize.

The *Editor* begs leave to tender his acknowledgements to the profession in the West, for the support that has enabled his publisher to reach and finish the sixth volume of this work. For the convenience of gentlemen who may now, or hereafter, wish to subscribe, this volume will be made the first of a new series or *Hexade;* its title page at once indicating it as volume seventh of the entire work, and volume first of the second Hexade.

The Western Journal is the oldest Medical, scientific, or literary periodical in the valley of the Mississippi, except news-

papers. It has struggled through various difficulties; and fallen successively into the hands of several publishers. Its projector and original Editor has been aided, at different times, by two assistants, though at one period, to preserve its very existence, he alone, was both editor and publisher. His last coadjutor was Dr. Finley, whose withdrawal must be regretted by every reader of the Journal. All these changes were, perhaps, in some degree inseparable from such an undertaking in a new country. But the Editor has, as he believes, good reason for anticipating a firmer and happier progress for the Journal hereafter, than that which it has passed through. He does not expect it to change publishers so often, as heretofore; he hopes to see it issued with more punctuality, and flatters himself; that a greater number of the respectable physicians of the West, will hereafter inscribe on its pages the results of their experience.

To the East he does not venture to look either for patronage or professional contribution. The Journal has never, yet, had a dozen subscribers east of the mountains, nor have half that number of his eastern brethren contributed to its pages! In Philadelphia, the seat of his *alma mater* and the emporium of the medical sciences, for some time the only subscriber was the public spirited *Matthew Carey, Esq.*, and when the learned Dr. Bell, of that city, was writing the Treatise on Mineral Waters and Baths, which was lately commended to the readers of this miscellany, he could not find a copy of it in the whole of that great city, from which to transcribe the history of the principal mineral springs of Kentucky and Ohio.

The Editor notes these facts, as items in the history of western medical literature; and may add, that the periodical press of the Eastern States, has seldom taken the slightest notice of his Back-woods' enterprize; although, with all its imperfections, it has received sufficient Back-woods' patronage, to live for a longer period, than a majority of the medical journals that have shot forth in the East.

It will be the duty, as it is the desire and design, of the original, now the sole editor, to devote to it more time and attention, than he has heretofore done; and aided by such of his pub-

lic and private pupils, scattered over the valley of the Mississippi, as cultivate the profession, *con amore*, he hopes to render the second Hexade, in all respects, superior to the first.

The plan of the work, admitting of Original Communications, Reviews, and Miscellaneous Intelligence—analectic, analytical and original—has been devised, as best adapted to the dissemination of every kind of professional information, and fitted to render the work *E sylvis, acque atque ad sylvas, nuncius.*

II. The Epidemic.

The reappearance and desolating spread of the Malignant Cholera, has induced us to give up a large portion of this, as of some former numbers, to that subject. The eclectic review which fills an entire department of this number, will give to our remote and insulated readers, whom but few of the treatises on Cholera, ever reach, an adequate idea of the methods of cure which have been found most beneficial elsewhere; and taken, in connexion with what we have previously published, will, indeed, constitute nearly all that has been proposed for that purpose.

That the best of these foreign methods, will be found well adapted to the cure of the Epidemic, in the valley of the Mississippi, is extremely doubtful; for while, its great features remain unaltered, it can scarcely be supposed, that it does not undergo some modification in countries and climates and states of society, so remote from the region where it was first developed. These modifications will, of course, require a modified treatment, and in forming this, will the skill of our Western friends display itself.

We shall be happy to make our Journal the medium, by which they will favor the public with the results of their experience; hoping they will constantly bear in mind, that their papers will be read and esteemed—*cæteris paribus*—in proportion as they are composed of facts and suggestions which have not hitherto been noted.

For a history of the existing Epidemic visitation on this city, we refer to the close of the review to which we have just alluded.

III. Measles and Mumps in Combination.

Dr. A. W. Bowen, of the town of Russia, in the state of New York, has lately met with Mumps and Measles at the same time, in a number of patients, and has politely favored us with some brief notices of the combination. In 1832, from April to June, these two diseases prevailed extensively in the region where he resides.

"As a general remark, the Measles were mild, while on the contrary, the Mumps were almost invariably severe, and frequently attended with metastasis to the testicles. Some cases of the latter were attended with enormous swelling and high inflammatory excitement, requiring the lancet and other antiphlogistic remedies. Although a great many adult females were attacked with Mumps, and some while laboring under the Measles, yet I saw no case of translation to the breasts—nor heard of any. As instances of the close intimacy of Measles and Mumps, two cases, recorded at the time, are given below —they are only fair samples of a great manysimilar ones which occurred in the same district.

Miss H. Moon, Æt. 17, was attacked with Mumps May 3d, 1832—glands enlarged considerably—jaws seperated with the utmost pain and difficulty, attended with considerable inflammatory action. She was put on light diet and purged with sulphate of Magnesia. On the third day from her attack, she broke out finely with Measles. Her recovery was as rapid and as perfect as is usual in cases of either of these diseases.

On the 10th of the same month, her sister Susan, aged 15, broke out with the Measles, and the next day, the parotid gland of the left side, swelled with all the characteristics of Mumps; she recovered rapidly with the ordinary antiphlogistic treatment—without the lancet.

Of the cases of Measles probably nine out of ten required no medical treatment; there were, however, some few exceptions, which required all the skill and ingenuity of the science to combat. Of the the cases of Mumps in adult males, probably more than half were attended with translation, and required the most active remedies. As a local application to the scrotum, none appeared to afford so much relief, as wheat bran wet with a solution of acetate of lead in vinegar —or with vinegar alone—applied by means of a bandage around the hips, in such a manner as to support the testicle—as its own weight without such support, was of itself tormenting."

Measles and Mumps are dependent on different remote causes of a specific character; and the facts here narrated, prove that they may simultaneously develope their pathological effects in the same patient, one, however, affecting the skin and mucous membrane—the other the parotid glands.

IV. Convulsions of Young Infants.

We were taught to administer purgatives to new born babes. Our preceptor, a man of extensive obstetrical practice, not only believed in their safety, but in the necessity of their exhibition. His theory was, that the meconium must be purged off with cathartics, or it will irritate the bowels and excite convulsions; which, indeed, were quite common in his practice, and afterwards in our own. Whenever they occurred, we blamed ourselves for not having made a more liberal administration of calomel or castor oil. We have long since discontinued this practice, and seldom see any thing of infantile convulsions in these latter years. It is quite obvious, that they were generally excited by our cathartics, which were not merely superfluous, but positively injurious. It is seldom requisite to give *any* thing to facilitate the expulsion of the meconium, much less an active purgative, the irritation from which, very often excites the spasms it is designed to obviate.

V. Animalcules in our Hydrant Water.

Some time after the Epidemic reappeared in our city this spring, it was discovered that our hydrant water, pumped up from the river, abounded in animalcules, many of which could be seen by the naked eye, when examined under favorable circumstances. The phenomenon, of course, excited the 'wonderment' of the 'good people,' and the advocates for the animalcular origin of the pestilence, were fully confirmed. The 'new comers,' as they were considered, were examined by our friends Mr. Hentz, a skilful entomologist, and Mr. Dorfeuille of the

Western Museum, who ascertained that they were microscopic *crustaceæ*—aquatic insects of the great natural order of crabs and lobsters, and about as deleterious, it may be presumed, as those which are served up on the tables of our *gourmands*. After a few days they disappeared. It is said, that a few fish in the reservoir from which the city is supplied, would effectually prevent the reappearance of these aquatic lilliputians.

VI. Neglect of Vaccination—Free Schools.

The neglect of *Vaccination*, in Ohio, especially by the poorer classes of people, is, or ought to be, most alarming. Might not our legislature terminate this criminal apathy? We think they might; and hope they will, for at no distant day, we are likely to have the Natural Small Pox superadded to the Epidemic Cholera. Our plan is, that a law should be passed, excluding every child from the benefits of our admirable system of free schools, who has not been Vaccinated. To prevent complaints, it should not take effect, till six months after its passage, which would afford ample time to have all the children of the state Vaccinated; and, that those who are *very* poor, for whom the schools were, indeed, chiefly designed, might not be excluded, it should be made the duty of the Overseers of the poor, on the application of parents who have not the means of paying for the operation, to have it done at the public expense.

The immediate impulse and permanent stimulus, which this regulation would impart to the practice of Vaccination, would, we doubt not, render it universal over the state; and we respectfully commend it to the consideration of newspaper editors, politicians, (meaning statesmen) and the benevolent of all sects and parties.

VII. Inquiry into the Condition of the Medical College of Ohio.

In our last number, we inserted several of public documents, relative to alleged abuses in the government and organization of

the Medical College of Ohio; one of which, a resolution of the General Assembly, provided for the appointment of a Court of Inquiry by the Governor. The gentlemen appointed, met "according to law" on the 2nd Monday of April, and continued in session nearly three weeks. J. W. Willey, Esq. of Cleaveland, was appointed Chairman, and Dr. Z. M. Krider, of New Lancaster, Secretary. A long catalogue of charges and specifications were received by the Court, from Dr. Joshua Martin, of Xenia, President of the late Third District Medical Society of Ohio, and more than 50 witnesses were examined under oath. E. P. Cranch, Esq. of the Cincinnati Bar, acted as stenographer, and so voluminous was the testimony, that, we are informed, he has not yet completed a copy of it for the use of the Court; which is to meet in the course of the present summer, at Columbus, to examine it and prepare a report to the Legislature. It is to hoped, this report will be accompanied with such recommendations, as may guide that honorable body into a course of legislation, calculated to suppress the opposition which now prevails against the school, and raise it to a higher rank among our medical institutions. Should they do this they will deserve the thanks of the public.

VIII. Western Graduates.

Medical College of Ohio. At the last Commencement, the degree of M. D. was conferred on 19 Alumni of the school; and the honorary degree of M. D. on Dr. William Williams, of Milford, Ohio, and Dr. John J. Moorman, of Virginia.

Transylvania University. At the last public Commencement, 67 young gentlemen received the degree of Doctor of Medicine.

IX. Popular Lectures on Anatomy and Surgery.

We may mention for the information of the students of the West, that Dr. Joseph N. McDowell, of this city, has transferred his Anatomical Museum to Lexington, and will hereafter lecture

in that city. Dr. McD. is the nephew, and was the pupil, of the late Dr. Ephraim McDowell, of Danville, Ky. the first surgeon who extirpated a diseased ovary, and for a long time the only lithotomist in the valley of the Mississippi.

As a lecturer on Anatomy, Dr. McD. has, perhaps, no equal of his age in America, being uncommonly clear, energetic and fluent.' His course will be a valuable auxiliary to that delivered in the University.

X. Lithotomy.

The number of Lithotomists in the Western states, is rapidly increasing. Two new ones have lately made their *debut* in this city—Dr. Landon C. Rives, who operated on a boy 5 years of age, in Dayton, and Dr. McDowell, whose patient was a man of 60, in this city. Both operations were perfectly successful.

XI. Medical Obituary.

James Roane, M. D. of *Nashville, Tenn.* This gentleman died of Epidemic Cholera, on the 27th of February last, at the age of 43. He was a native of that state, in which, for many years, he sustained a high rank as a physician and a gentleman. At the time of his death, he was President of the Medical Society for regulating the practice of physic, in Tennessee. In our cotemporary of Lexington, we observe a notice of his life and character, from its accomplished Editor, Professor Yandell who knew him personally, from which we extract the following honorable and merited tribute.—'The qualities to which he owed his enviable popularity, may be summed up in these words—his industry made him learned; his punctuality in business secured him the confidence of the public; his liberality won for him the admiration and respect of his professional rivals; and the kindness of his manners, and the gentleness of his temper rendered him the idol of his patients." The death of such a physiciaa, in the meridian of his usefulness, is a public calamity.

Dr. Richard Pindell, of *Lexington, Ky.* This aged veteran in the profession, expired on the 20th of March, in his 79th year. He was a native of Maryland, but had practised his profession at Lexington, for the last twenty years. In sound practical skill, devotion to business, benevolence to the poor, and urbane and gentlemanly deportment, Dr. Pindell was surpassed by few members of the profession in the West; and will be long remembered with gratitude, by an extensive circle of patients and friends, both in Maryland and Kentucky. The editor of the Transylvania Journal has promised his readers a biographical sketch of Dr. P. to which we shall refer in a future number.

Joseph Challen, M. D. of *Lexington, Ky.* This gentleman was a graduate of the Transylvania School, and a native of Lexington; but commenced his professional career in this city, whence he returned to Lexington a few months since, leaving behind him many friends both in and out of the profession. He fell a victim to the Cholera, during its late visitation at Lexington, June 11th, in his 30th year.

Thomas Flanner, M. D. of *Zanesville, O.* The deceased was a native of North Carolina. He graduated in the University of Pennsylvania, about the year 1818, and was for 12 months a house surgeon in the Pennsylvania Hospital. Emigrating to Ohio, after this course of clinical studies, he first settled in St. Clairsville, but afterwards removed to Zanesville, where he soon earned a high reputation. At the time of his death, he was President of the General Medical Society of the state. When the Cholera appeared in Wheeling, in the month of May, he determined to visit that place, and study its character before it should reach the people who might look to him for advice. On his way back, he was seized with the disease, and died before he reached home.

William Richards, M. D. of *Georgetown, Ky.* This gentleman graduated in Lexington, of whose vicinity he was a native, in the spring of 1823. For some years past he had withdrawn from the practice, and cultivated a plantation in the south, residing in Georgetown in the summer. When "down

the river" last autumn, he saw much of the Epidemic, and on its appearance in Georgetown, the people sought to avail themselves of the advantages of his experience. Charging nothing for his services, the poor flocked to him for advice, and thus oppressed with business, he sunk under the Epidemic, in the midst of its reign. Dr. R. was a talented physician and an exemplary gentleman.

Lewis Heermann, M. D. Doctor Heermann was a native of Germany, but had been in the Medical Department of our navy, for more than 25 years. For a long time he was hospital surgeon at New Orleans. Two or three years since he was appointed Fleet surgeon in the Mediterranean service, but a severe illness compelled him to return to the United States; when by regular promotion he became the senior surgeon of the Navy, a rank which he held at the time of his death, which was caused by the Cholera in New Orleans.

The deceased was a man of respectable talents, and extensive professional acquirements; an excellent disciplinarian, and an accomplished gentleman. We knew him personally, and esteemed him for his precision of manners, and animated conversation; but are without the materials for such a tribute to his memory, as his virtues and official rank unite in demanding for him.

At present, we can only add, that when a young man, he was present with Commodore Decatur, and assisted in the burning of the frigate Philadelphia, in the Mediterranean.